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prehistoric and historic
steps and trails of
glen canyon-lake powell



N. B. PATTISON

L. D. POTTER

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LAKE POWELL RESEARCH PROJECT BULLETIN

BULLETIN EDITORS

Jeni M. Varady and Orson L. Anderson

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IN THE LAKE POWELL REGION

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PREHISTORIC AND HISTORIC STEPS AND TRAILS
OF GLEN CANYON-LAKE POWELL

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September 1977

LAKE POWELL RESEARCH PROJECT

The Lake Powell Research Project (formally known as Collaborative Research on Assessment of Man's Activities in the Lake Powell Region) is a consortium of university groups funded by the Division of Advanced Environmental Research and Technology in RANN (Research Applied to National Needs) in the National Science Foundation.

Researchers in the consortium bring a wide range of expertise in natural and social sciences to bear on the general problem of the effects and ramifications of water resource management in the Lake Powell region. The region currently is experiencing converging demands for water and energy resource development, preservation of nationally unique scenic features, expansion of recreation facilities, and economic growth and modernization in previously isolated rural areas.

The Project comprises interdisciplinary studies centered on the following topics: (1) level and distribution of income and wealth generated by resources development; (2) institutional framework

for environmental assessment and planning; (3) institutional decision-making and resource allocation; (4) implications for federal Indian policies of accelerated economic development of the Navajo Indian Reservation; (5) impact of development on demographic structure; (6) consumptive water use in the Upper Colorado River Basin; (7) prediction of future significant changes in the Lake Powell ecosystem; (8) recreational carrying capacity and utilization of the Glen Canyon National Recreation Area; (9) impact of energy development around Lake Powell; and (10) consequences of variability in the lake level of Lake Powell.

One of the major missions of RANN projects is to communicate research results directly to user groups of the region, which include government agencies, Native American Tribes, legislative bodies, and interested civic groups. The Lake Powell Research Project Bulletins are intended to make timely research results readily accessible to user groups. The Bulletins supplement technical articles published by Project members in scholarly journals.

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ABSTRACT

Prior to the flooding of Lake Powell and the establishment of Glen Canyon National Recreation Area, an ambitious salvage program was completed by The Museum of Northern Arizona and The University of Utah. Many instances of prehistoric and historic steps and trails were recorded. While conducting shoreline ecology research, we became interested in the trail system as disclosed by the steps and trails still evident along the shore.

Steps, as pecked by stone tools or picked by metal tools, and linked trails along the shore of the lake and those now submerged are inventoried and located. A trail system is mapped as far as present information allows. Resource utilization by user groups and changing travel patterns, as evidenced by the step and trail system, are briefly discussed. These groups include prehistoric and historic Indians, missionary-explorers, miners and stockmen.

INTRODUCTION

The area with which this study is concerned is the portion of the Upper Colorado River system called Glen Canyon by John Wesley Powell during his explorations in 1869 and 1872. Today, Lake Powell, the impoundment of water behind Glen Canyon Dam, inundates much of the canyons and glens which prompted the name. It is a lake in a relatively barren land, characterized by the deep canyons, precipitous cliffs, mesas, and plateaus of the canyonlands in the Southwest.

The geological formations are largely sandstones, interspersed with occasional layers of shale and limestone. The Colorado River has cut an inner gorge within an older broad valley. The cliffs in much of Glen Canyon are of the Glen Canyon group--Navajo, Kayenta, and Wingate sandstones. In the lower canyon the overlying Entrada and Summerville sandstones form soft cliffs and the Morrison formation caps such prominences as Cummings Mesa. Just above the thick beds of Navajo sandstone, which form the upper walls of the inner gorge, is the thin Carmel. Because of the differential weathering patterns of the Glen Canyon sandstones, relatively broad terraces or platforms have developed on the Carmel formation and Kayenta sandstone, respectively above and below the Navajo sandstone. For the Navajo, the Paiute, and the Anglo stockmen the terraces provided forage areas in an arid and generally inhospitable region. Most of all, they allowed unexpectedly effective routes to traverse the canyon regions (Figure 1).

The Navajo sandstone weathers in such a way that huge alcoves, ledges, and rounded domes are formed. The ledges and alcoves provided a convenient place for prehistoric people to build homes and storage rooms (Figure 2). The slickrock domes were easily pecked with stone tools to provide the foot and hand holds necessary to negotiate the steeper slopes. These trails were often followed by the Navajo who brought sheep to the river across slickrock domes, terraces, and sand bars.

The Navajo sandstone is underlain by Chinle, Shinarump, and



Figure 1. The sloping terrace of Kayenta sandstone and the Carmel platform capping the rounded sandstone domes in the distance were used for foot and stock trails and for forage.



Figure 2. An Anasazi structure in an overhang or rock shelter. Pecked steps often led up the slickrock to these sites.

Moenkopi. Where the unstable Chinle is exposed in the north and south Rincon areas, huge rock slides of overlying Wingate and Kayenta occur. A detailed study of the shoreline surface features and geological strata of Lake Powell has been reported by Potter and Pattison (1977).

The building of Glen Canyon Dam and the impoundment of Lake Powell was another chapter in the program to harness the waters of the Upper Colorado River Basin. The Historic Sites Act of 1935, and the passage of Federal Public Law 485 in 1956, made it mandatory for the National Park Service to salvage and protect anything of scientific value which would be jeopardized by the building of the dam. Therefore, one of the most diversified emergency salvage programs undertaken up to that time was initiated by the National Park Service. Two major contractors, the University of Utah and the Museum of Northern Arizona, began an 8-year program in the Glen Canyon region involving geology, paleontology, archeology, history, ethnohistory, ecological aspects, and other related sciences. Jennings (1966) has ably summarized the extensive research.

While participating in the Shoreline Ecology Subproject of the Lake Powell Research Project, we became interested in the shoreline features popularly known as "Moqui steps," and the often-associated Navajo-Paiute stock trails. Our interest was encouraged by personnel of the Glen Canyon National Recreation Area, especially by the Chief Park Interpreter, Robert Woody, who felt that a detailed inventory of these steps and trails would be a valuable source for the National Park Service interpretative program. As the documentation progressed, with the invaluable aid of the Museum of Northern Arizona and the University of Utah archeological and historical records and publications, it became evident that one could not isolate prehistoric pecked steps and Navajo stock trails as separate entities in a trail system. Therefore, we have included many other types of trails, although the selection is far from complete, and historical factors, in particular, have been neglected. Crampton has conducted extensive research on the historic

trails (1960, 1962, 1964a, 1964b). A section on cattle trails was added after discussion with J. Frank Wright and Brigham Stevens of Blanding, Utah.

Moqui steps (Moqui is a term used by the Spanish for people of the Hopi area) are hand and toe holds pecked with stone tools into the soft sandstones to facilitate passage in areas where such passage is difficult. Such pecked steps are found in several areas of the Southwest but the distinctive factor about the Glen Canyon steps is their adaptation and utilization by user groups who succeeded these prehistoric peoples in the canyon.

Anasazi is a Navajo word for "old people" and the name is applied to those who occupied certain cultural and geographical areas in the Four Corners region for nearly 1500 years beginning 1 A.D. or earlier. Most of the Pueblo (later period) Anasazi in the Glen Canyon area are included in the Kayenta Branch. These groups appear to have been relatively aggressive colonizers who moved up the Escalante River and onto the Kaiparowits Plateau (Jennings, 1966) and who established influence in Pueblo Fremont country (Lister, 1959b; Lister, Ambler, and Lister, 1960). From evidence in the Moqui Canyon sites (Sharrock, 1963), a few Mesa Verde people moved from the northeast to the upper canyon. Mesa Verde pottery, along with Kayenta types, was recovered from sites as far south as Slick Rock Canyon (Sharrock, 1964). Lower Glen Canyon, however, was heavily Kayentan.

The occupation of the Glen Canyon region by prehistoric peoples was primarily to exploit the resources which included stone suitable for tool-making, wild plants, small animals, and pockets of agricultural land. The southern Paiutes who foraged in the area (Euler, 1966) left little evidence of their use of trails, but they undoubtedly ranged widely in this former Kayenta Anasazi country. The Navajo probably entered the canyon during the Indian wars of 1846 to 1870 (Crampton, 1959). Coming from their reservation area on the east bank of lower Glen Canyon and the San Juan River, they moved their flocks over the Carmel and Kayenta platforms to foraging areas along the Colorado River. It is reported, too, that Navajo

sheep were pastured on the mesas north and west of the river at least as far as the Escalante River.

Some explanation is necessary as to the use of the terms Navajo and Paiute in the text. In the Museum of Northern Arizona surveys, sites were designated as Navajo-Paiute because it is difficult to differentiate between the two. There has been much contact and intermarriage between the two peoples in late historic times. In the text, when Navajo is used singly in relation to sites in the lower canyon or on the San Juan River, it can always be interpreted to include, possibly, Paiute.

In 1776 the famous Domínguez-Escalante Expedition forded the river at what is today Padre Bay. Their pathway was preceded and followed by historic Indians, Mormons, miners, and possibly fur trappers who certainly knew the canyonlands country. From 1892 to 1903 a gold rush brought miners to the San Juan and Colorado river bars in the Glen Canyon region. Ranchers grazed cattle, and sometimes sheep, on every accessible mesa on both the right and left banks of the Colorado; today cattle are increasingly seen along the shores of the lake in the West-Face-Labyrinth area of the lake. It is quite possible that these herds follow some of the same trails used by the prehistoric Anasazi traveling between the highlands and the river.

Pecked steps, by whatever term is used (hand and toe holds, foot holds, or foot and hand holds), are cup-shaped depressions pecked into the steep sandstone slopes with a stone tool (Figure 3). Often there is a raised marginal shelf along the outer edge of the cup. In some instances a parallel series of large and small holds suggests specific planning for the foot and hand placement. Others are straggling and irregular. Some are only minimal, such as those leading into potholes temporarily holding water (Figure 4). Many prehistoric pecked steps have been enlarged or elongated with a pickax by Navajos or, in a few cases, by miners. The pick marks are clearly evident in the modified steps in Figure 5. Figure 6 illustrates a long series of these toe holds enlarged by miners to reach the Carmel terrace from California Bar (Main Channel Site 39).

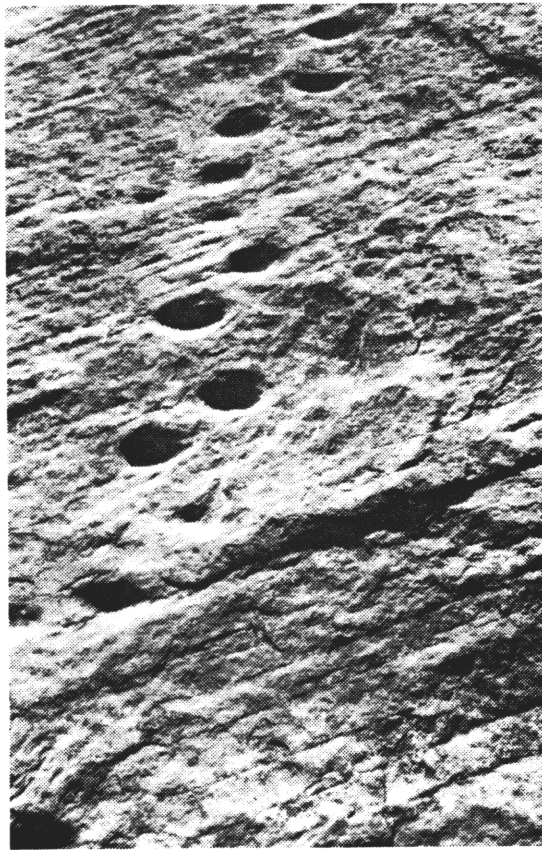


Figure 3. Hand and foot holds pecked with stone tools into steep-sloping slickrock.

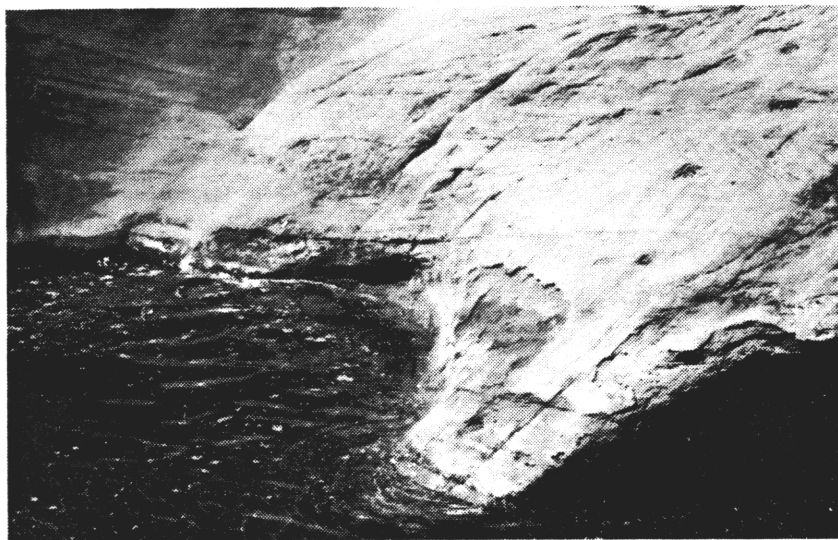


Figure 4. Badly eroded pecked steps leading to water-storage potholes.

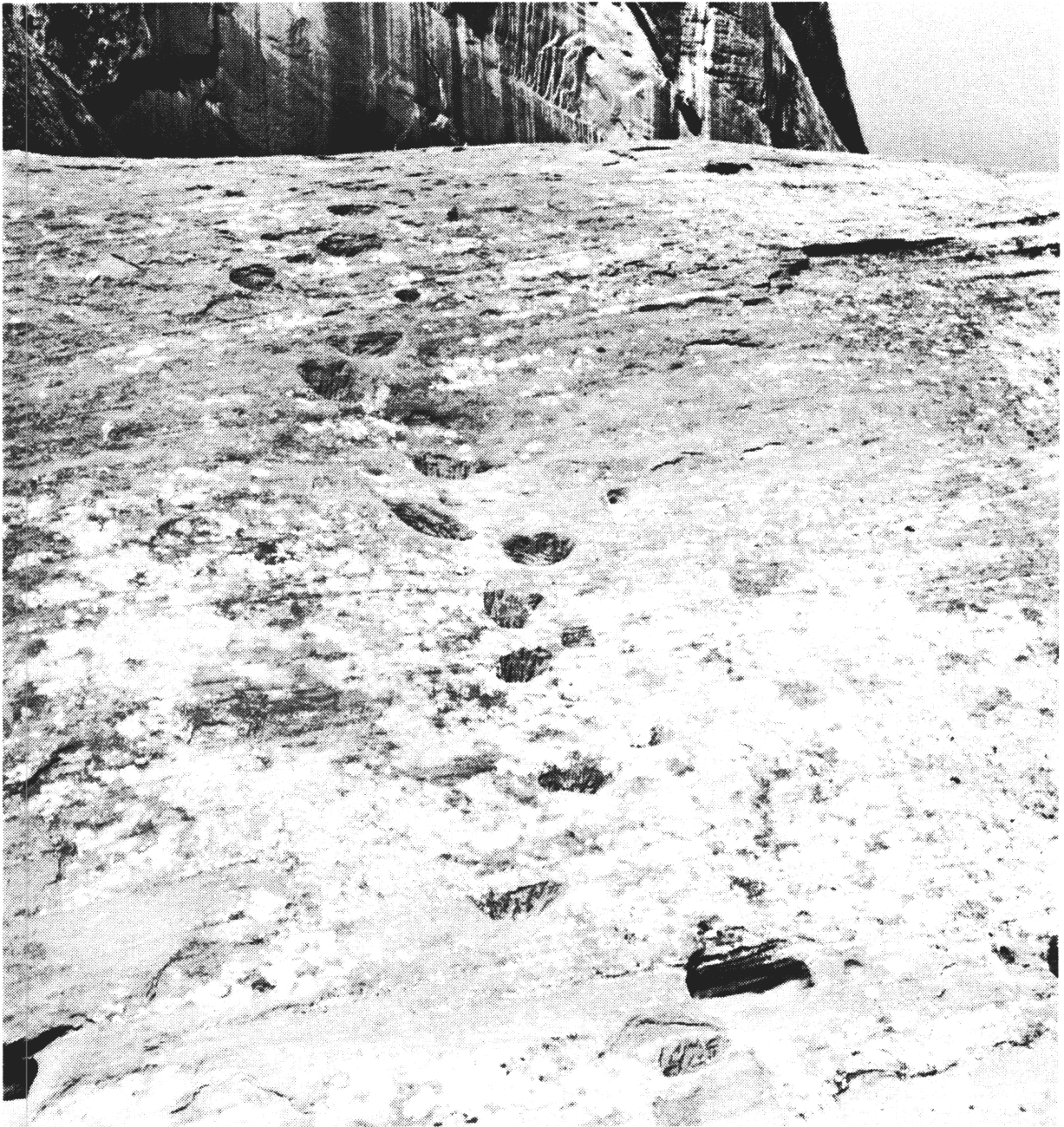


Figure 5. Prehistoric steps, originally pecked with a stone tool, later enlarged by use of a pick. Pick marks are clearly evident. (Photo from Dept. of Anthropology, Univ. of Utah)

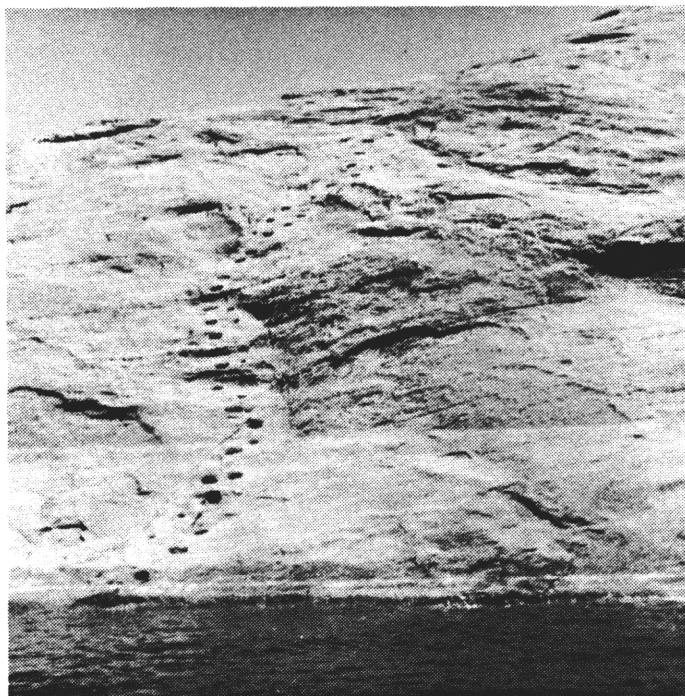


Figure 6. Long series of prehistoric toe holds enlarged by miners to reach rock terrace above the river at California Bar. (Photo by J. Frank Wright).

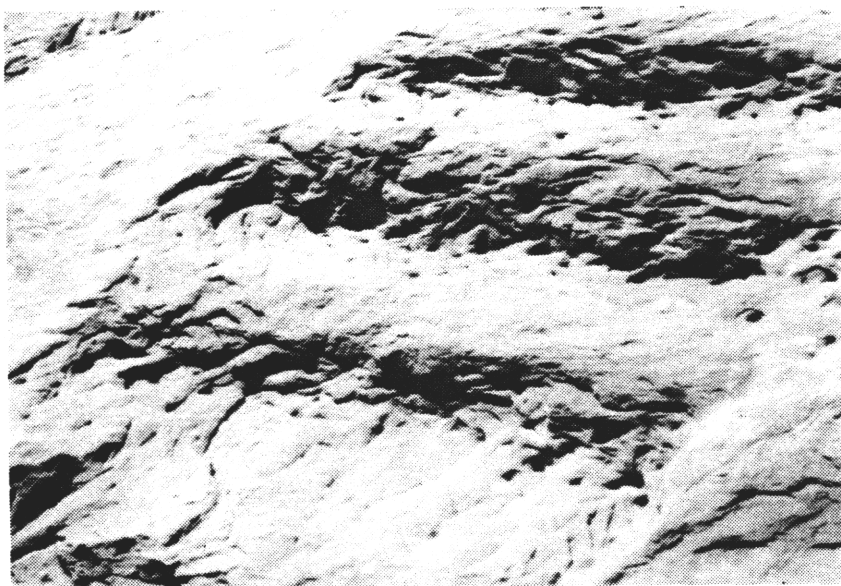


Figure 7. Picked platform steps fashioned by Navajos or miners often paralleled the aboriginal steps.

Navajos or Paiutes who used the same access routes as had the Anasazi built platform steps (Figure 7) often parallel to the prehistoric steps. Picked steps, as used in the text, refer to steps such as these which are cut with a pick or similar tool. The historic Indian also chipped ledges or oblique shelves along the curving slopes (Figure 8). These sheepherders built sturdy ramps along steep trails utilizing rocks and logs to keep the sheep on the trail (Figure 9). Occasionally, too, they built a platform of rock slabs and logs to widen a narrow pass (Figure 10). Gold miners made beautifully shaped, elaborate stairways in such places as Klondike Bar (Figure 11) and Anderson Bar (Schock Trail) (Figure 12). Easily seen from the lake in a very few places are trails up the talus slopes such as at Trail Canyon (Figure 13). Horse trails along the Kayenta bench of the San Juan River are barely discernible (Figure 14).

On the maps and in the inventory, each site is given a number which is exclusive for this publication. The main channel sites are numbered consecutively from Glen Canyon Dam upstream. The sites in each tributary are numbered from the mouth toward the upper end for that particular tributary. The designation of left bank or right bank, whether in main channel or tributary, always refers to these banks as one is moving downstream. The site numbers of other institutions for archeological or historical features associated with steps or trails, or, in some instances, the numbers given to specific steps or trails, are given in the inventory. These include the Museum of Northern Arizona numbers (NA0000), the University of Utah numbers (42Ka, Sa, or Ga,000) and Crampton's historical numbers, but not any prior to those. Caution must be exercised when a set of steps or a trail is associated with one of these former numbers; Navajo Canyon Site 1 is not intended to supplant NA5253, but is the site number of the steps associated with the Anasazi habitation site NA5253. The University of Utah (UU) sites were verified in Fowler (1959) and Fowler et al. (1959a,b).

It is important also to remember that the inventory is only of the step and trail sites. There are hundreds of archeological

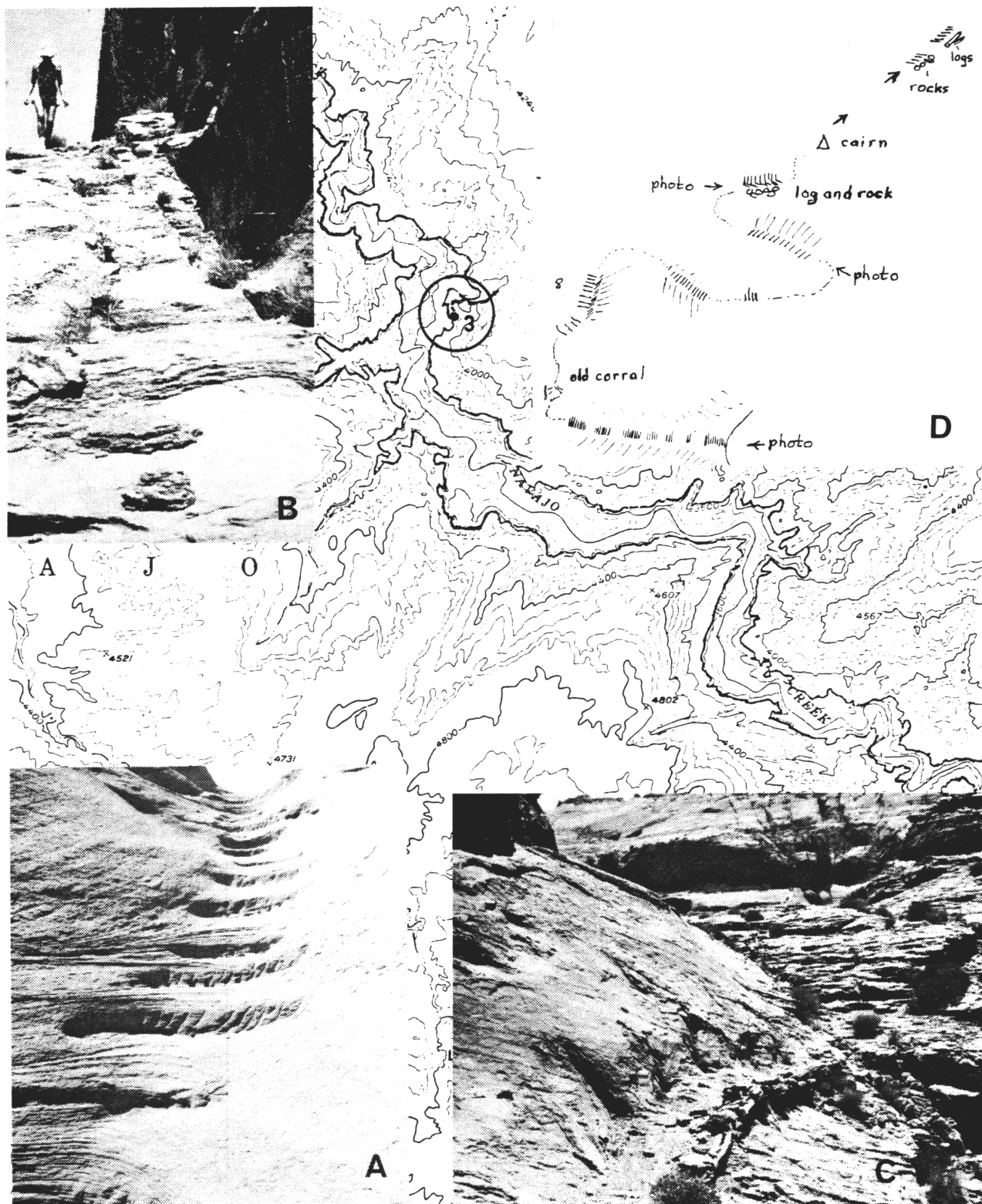


Figure 8. Navajo Canyon Site 3 stock trail. A. Platform steps cut with a pick, as seen from the lake. B. Steps along base of cliff. C. Rock and log ramp along trail. D. Sketch of general route.



Figure 9. Rock and log retainer along chipped trail usually attributed to Navajo or Paiute herders who built them to keep sheep on the trail. (Photo from Dept. of Anthropology, Univ. of Utah)



Figure 10. Platform constructed with slabs of rock and logs to widen a narrow trail. (Photo from Dept. of Anthropology, Univ. of Utah)

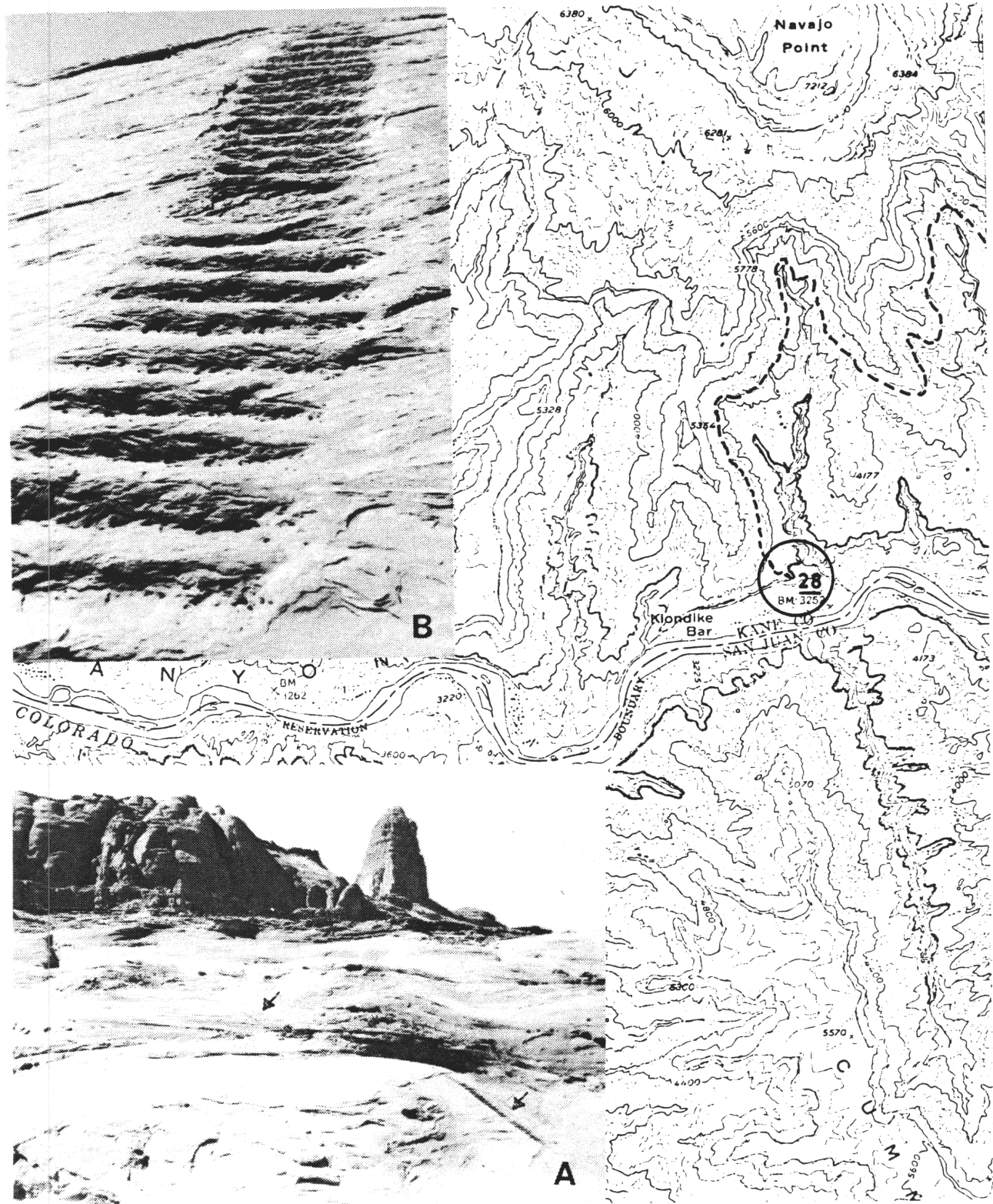


Figure 11. Main Channel Site 28 Klondike steps and trail. A. General view showing lower and upper set of miners' steps and trail to Carmel platform. B. Detail of lower set of 33 steps.

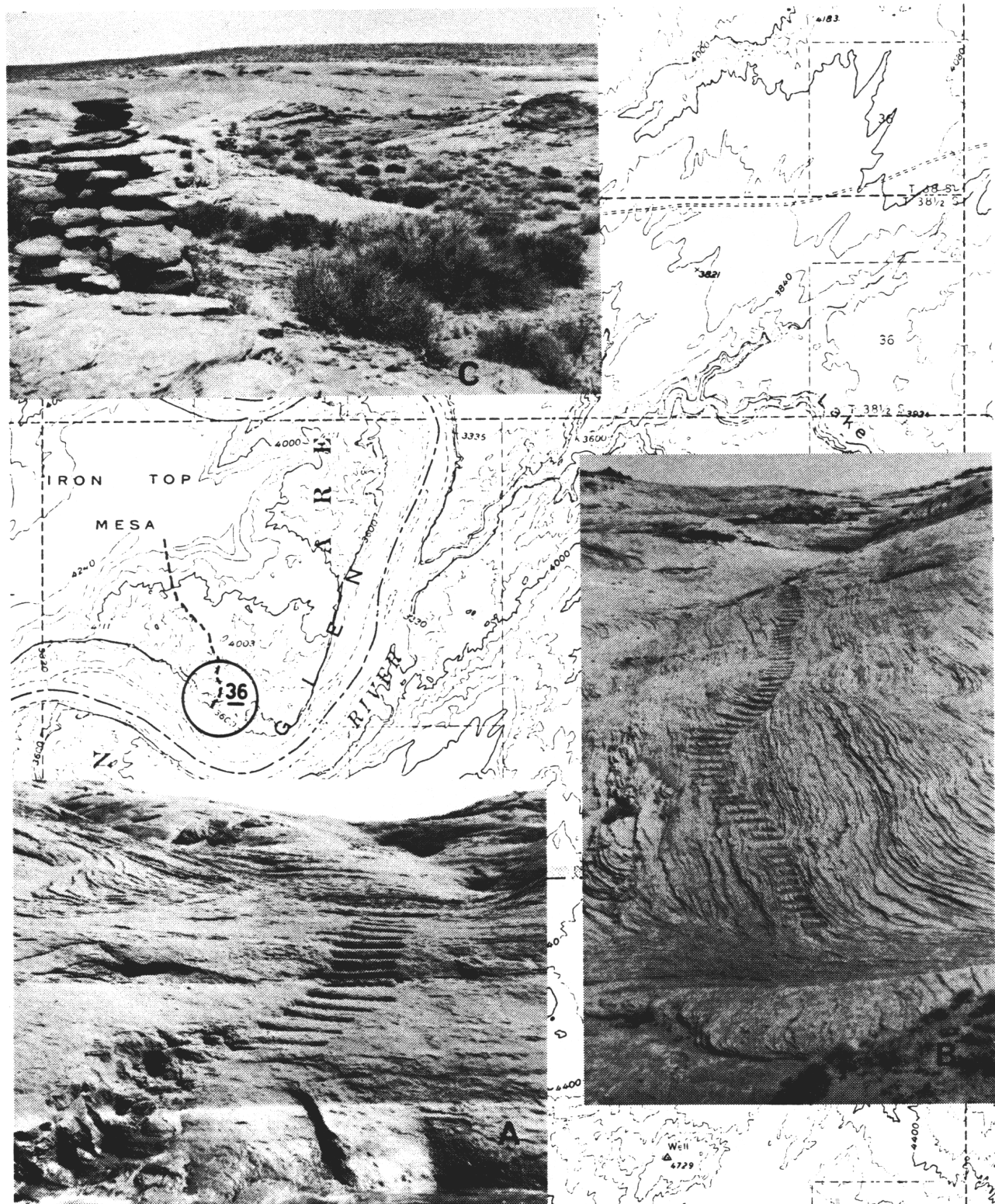


Figure 12. Main Channel Site 36 Schock steps and trail. A. View of miners' steps from lake at 3665 foot elevation. B. Long series of steps midway along trail. C. Series of cairns marking trail to Carmel platform in distance.

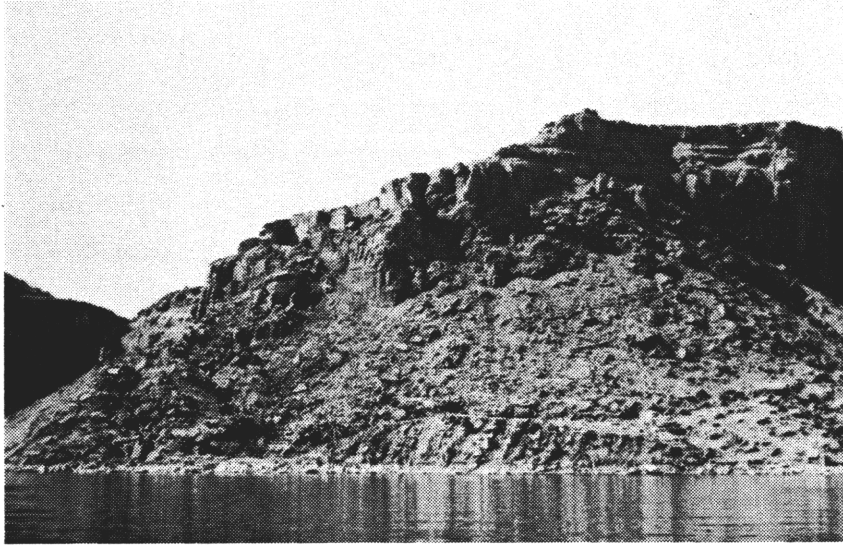


Figure 13. Livestock trail winding back and forth across the steep talus slope at Trail Canyon. Improved by CCC in the 1930s.



Figure 14. Horse or cattle trail, overgrown by vegetation, along the Kayenta bench of the San Juan River. (Photo by Tad Nichols).

and historical sites on the main stem and in the tributaries of Glen Canyon. However, the relative numbers of the step and trail sites correspond to the total number of sites surveyed in the Museum of Northern Arizona and the University of Utah research projects. Where there is an exception it is generally attributable to the fact that these step and trail data do not include tributary sites any farther up the canyon than the lake level at 3700 feet, and thus, as in Moqui Canyon, the most heavily populated areas are excluded.

On Maps 1, 2, and 3 (Appendix) the step and trail sites are located and identified with a specific symbol, and any associated lithic or habitation site is also identified with a symbol. The exception to this is the labeling of stock trails =S, most often on Map 3. These trails are located only where they leave the lake shore.

It may be difficult to understand differentiation between a Navajo stock trail (=N) and a stock trail (=S) which refers to either cattle or sheep. The Navajo trail symbol usually signifies that elongated steps or stairways were cut in the rock with a pick or other metal tool, often over or near prehistoric pecked hand and toe holds; this trail then may, and usually does, lead out over the Carmel terrace and to the highlands.

Map 4 depicts the composite trail system for the entire lake area. Many of the extended trails, mapped by members of the Museum of Northern Arizona survey crews, were transferred to the maps in addition to those documented from other sources. The scale of Map 4 made it necessary to eliminate the specific pecked or picked step sites.

The majority of the pecked steps and picked stairways or ledges have been flooded by the lake. Those still remaining above water and circled on Maps 1, 2, and 3 include examples of each type of step or trail mentioned in the inventory. Trails on the Carmel and Kayenta platforms are not distinguishable from normal game trails.

Upon examination it will become apparent that the major number of trails are on the left bank of the river system. This can be

attributed to two things--there are not as many trails on the north or right bank, or the trails were not mapped in as great a detail as those on the left bank. An extensive survey of right bank trails might prove interesting.

INVENTORY

Map 1 - Glen Canyon to Forbidding CanyonMain Channel

The inventory of step and trail sites on the main channel of the Colorado River in its course throughout Glen Canyon is arbitrarily divided into three sections to coincide with three maps. This division was not intended to demonstrate any differences in the three areas. Fortuitously, with exceptions and overlaps, the trails do appear to be associated with sites which indicate a varying exploitation of the resources of the canyon system, and which fall nicely into three categories.

Map 1 covers most of lower Glen Canyon if we consider the lower gorge to be below the San Juan River. The geological strata range from the deep beds of Navajo sandstone at the river bed to the Straight Cliffs sandstone at the top of the Kaiparowits. Most of the habitation areas (whether architectural or camp sites), lithic workshops, and pecked or picked steps or stairways were contained in the Navajo sandstone or found on the Carmel terrace. More extensive trails, of course, led to the highland areas on both sides of the river.

Main Channel Site 1. Anasazi and Navajo. NA6512. Prehistoric pecked hand and toe holds and Navajo stock trail from bar to Jna (Jurassic Navajo) slickrock. Stock trail continues southeast on Jca (Jurassic Carmel) platform. Trail to bar probably used by Navajo Canyon (Navajo Creek) population. Lindsay (field notes, 1959) stated that it was an easy crossing from here to Warm Creek.

Main Channel Site 2. Anasazi. Associated with lithic and ceramic site NA6508. Pecked steps. Across channel from Gunsight Butte.

Main Channel Site 3. Anasazi. Associated with chipping site NA6510. Pecked steps. On bench, left bank, away from river and on trail between Labyrinth Canyon and Padre Bar area.

Main Channel Site 4. Anasazi. Associated with chipping site NA6509. Pecked steps. On trail system between Labyrinth Canyon and Padre Bar area.

Main Channel Site 5. Anasazi. Associated with prehistoric site NA6505, ceramics only (Adams, Lindsay, and Turner, 1961). Pecked steps. Upstream from mouth of Labyrinth Canyon.

Main Channel Site 6. Navajo. Associated with NA6429, UU42Sa-412, HS100, hogan, etc. Stock trail up slickrock and out over benches to the southeast. Platforms, at top and base of bench, fashioned by cutting away section of sandstone and building supports with rocks and logs. Steps cut where needed between the two platforms. Elaborate trail justified by good vegetation on the river bar. Upstream from mouth of Labyrinth Canyon.

Main Channel Site 7. Anasazi. Associated with prehistoric lithic site NA6506. Pecked steps. Upriver from mouth of Labyrinth Canyon.

Main Channel Site 8. Navajo. Associated with Navajo structure at NA6494. Stock trail picked steps. Site was midway between two trails coming south from the river and Padre Bar.

Main Channel Site 9. Anasazi, Navajo-Paiute, and other. Associated with NA6426 prehistoric camp and lithic site, NA6426N Navajo stock trail and sheep camp complex, and HS116 probable Dominguez-Escalante landing site. Pecked steps and stock trail to the Jca platform. Trail from Padre Bar to Jna; steps pecked at steep rounded bench; trail continued over slickrock with rampart added; steps again over steep portion; trail headed southeast toward Face Canyon and turned east toward Face Canyon drainage (Lindsay's field notes, 1959). A second trail followed the river to cluster of Sites 5, 6, and 7. Site important prehistorically to Anasazi and possibly ancestral Hopi (Jeddito B/Y sherds found) and historically to explorers (Dominguez and Escalante), Navajos, and miners (Crampton, 1960). Good campsite and river crossing.

Main Channel Site 10. Anasazi. Associated with lithic site NA6501. Pecked steps. Upriver from Labyrinth Canyon. Sheep trails near by at NA6426.

Main Channel Site 11. Explorer and other. In same area as Crampton's historic sites 8, 127, and 9 (1960) all of which concern research of Fathers Domínguez and Escalante in 1776 for a ford across the Colorado. Site 11 is approximately at the location where an exploring party entered the Colorado from Padre Canyon (right bank of Navajo Canyon) and proceeded along the river bank to a point where they could effect a crossing (Crampton's HS9). Several ancient trails to the river in this area were added to, enlarged upon, and altered by the many travelers who used this ford for about 100 years. Crampton (1960) has amply and interestingly described this site and those in the vicinity in his historical site study.

Main Channel Site 12. Navajo and Anasazi. Associated with site NA6490, UU42Sa410, Anasazi structure. Stock trail up cliff along diagonal ledge. Logs and rocks formed barrier at steep jump-up and seven pecked steps (enlarged) were cut in the sandstone (Figure 9).

Main Channel Site 13. Anasazi and Navajo. Associated with chipping site NA6493. Pecked steps overlain with Navajo stock trail.

Main Channel Site 14. Navajo. Associated with Navajo-Paiute petroglyph site NA6469. Stock trail from sand bar to highlands between Face Canyon and West Canyon.

Main Channel Site 15. Miner. HS98. Slickrock trail from 300 feet down to the sand bar; picked steps and lateral path or dugway. Prospect pits and bar staked as late as 1929 (Crampton, 1960). On Marigold Bar upstream from Spring and Face canyons.

Main Channel Site 16. Anasazi. Associated with Anasazi habitation site NA6466, UU42Sa400. Pecked steps. Trail from the Jna terrace allowed easy access to the Jca platform. Upstream from Spring and Face canyons.

Main Channel Site 17. Navajo. Associated with Navajo sheep camp at site NA6465. Stock trail. Upriver from Spring and Face canyons.

Main Channel Site 18. Anasazi. Associated with chipping site NA6464. Pecked steps. Upstream from Face and Spring canyons.

Main Channel Site 19. Anasazi. HS24. Twenty-three to 25 toe and hand holds on cliff wall from terrace to open country. Difficult and precarious. Right bank south of Last Chance (Crampton, 1960).

Main Channel Site 20. Navajo. Associated with Navajo-Paiute campsite NA6428. Stock trail and ramp to the slickrock. Lindsay (field notes, 1959) mentioned here, and in relation to other sites in the area, that there were no good crossings because of vertical cliffs on the north bank. Could cross downstream to Last Chance.

Main Channel Site 21. Navajo. HS119 and associated with UUKa442, a chipping site. Stock trail. West for 300 yards, then north over a sharp knob into which were picked 5 steps. Looked like a Navajo trail; no other evidence. Downstream from Friendship Cove, right bank.

Main Channel Site 22. Anasazi and Navajo. Associated with architectural features at NA5252, UU42Sa398. Pecked steps and well defined trail and ramp, improved since 1958 when first documented. An important focus of trail system; no trails on left bank from here to West Canyon or from this locale to Dungeon Canyon.

Main Channel Site 23. Anasazi. NA8450. Pecked steps. At point opposite Rock Creek and trail junction.

Main Channel Site 24. Anasazi. Associated with prehistoric habitation site NA2691. Pecked steps to alcove shelter. Right bank upstream from Rock Creek.

Main Channel Site 25. Anasazi. Associated with NA5984, a lithic and ceramic prehistoric site. Pecked steps. At mouth of Dangling Rope, right bank. This may be at the same site described by Crampton (HS123) and by Lindsay (notes on Glen Canyon trails) as "toe holds from site to river."

Main Channel Site 26. Anasazi. Associated with NA6422 prehistoric lithic workshop. Pecked steps. At mouth of Dangling Rope, right bank.

Main Channel Site 27. Anasazi. Associated with lithic workshop NA6445. Pecked hand and toe holds to the Carmel terrace.

Main Channel Site 28. Miner. HS28. The famous Klondike Steps (Figure 11). One portion (33 steps) of beautiful stairway carved by miners at time of gold-mining activity begun at Klondike Bar in 1897. Lake level 3682 will bring water to base of lower set. These steps average 80 to 90 centimeters (cm) in width, with 25-cm platforms and 10-cm risers.

If one follows to the left side of the knob which is to the west of the top of this set of stairs and then moves north, one finds another set of 15 steps on the east-facing slope. Miners were equipped and supplied by pack trains which moved over a spectacular trail which wound about over the slickrock to a point 800 feet above the river. These steps are a remnant of that trail. Crampton (1960) described it thus:

"The trail ascends sharply over the steeply-sloping sandstone until a rim is reached about 200 ft. above the river. Over a part of this distance the trail consisted of log runners held by heavy stakes set in holes worked in the sandstone cliff. The cliff was also notched 6 or 8 in. deep thus providing about one-half the width of the trail. Some of this type of construction crosses a cliff slope too steep to walk over without the trail immediately above the river over 100 ft. below. Picked steps and fill were also used in the first portion of this trail. Beyond the rim the trail crosses over slick rock and is marked by cairns. Picked steps in the steepest slopes appear in at least eight different places."

By heading the tributary canyons Driftwood, Cascade, and Twilight (Navajo Valley) and moving along the fingers of the Kaiparowits Plateau, pack trains and horses could reach Fiftymile Point southwest of Hole-in-the-Rock road and from there follow that road to Escalante, Utah.

Main Channel Site 29. Anasazi. Associated with NA5248, a pre-historic lithic and petroglyph-rock shelter site. Pecked steps. Right bank, near mouth of Cascade Canyon.

Labyrinth Canyon

Labyrinth Canyon lies between Navajo Canyon and Face Canyon on the left bank of Lake Powell about 19 miles from Glen Canyon Dam. Although no specific site is located on the base maps of the Museum of Northern Arizona Archeological Survey and Excavations, 1959-1960 report (Long, 1966), A. L. Lindsay recorded in his field notes that pecked steps led out of Labyrinth Canyon on both sides about 6 miles upstream from the Colorado, supposedly to the Carmel platform. This would place the ascent almost at the source of this particular drainage.

If one followed the steps over the slickrock, at Main Channel Site 6, to the Carmel platform one could pick up the trail, east of Sites 5, 6, and 7, which led into Labyrinth. A stock trail which continued from the base of Tse Tonte probably tied into the Navajo Canyon drainage (Lindsay, 1959 field notes). The whole system is part of the upstream and Face Canyon complex.

Navajo Canyon

Navajo Canyon joins Lake Powell on its left bank about 10 miles upstream from Glen Canyon Dam. Although many sites, both Anasazi and Paiute-Navajo, were located in the extensive Navajo Creek drainage, they were not numerous in the lower canyon. This is attributed to the flushing out of the old alluvial fill upon which such sites would have been situated (Miller and Breternitz, 1958). Navajo Canyon, before the lake, could be traversed throughout its length in the canyon bottom and regional Navajos moved their flocks, by precipitous trails, from the grazing grounds on one side to those on the other in spite of the deeply entrenched canyon.

Navajo Canyon Site 1. Anasazi and Navajo. Associated with NA5253 Anasazi habitation on right bank. Pecked steps to Anasazi site; prehistoric foot trail and Navajo stock trail over the talus slope to the Carmel (Jca) platform. Two miles distant from Navajo site NA6512 on the main channel. Probably extensively used by Navajo Creek population. Ties into trail system in highlands between Face Canyon and Navajo Canyon.

Navajo Canyon Site 2. Anasazi and Navajo. No known association. Footholds and stock trail. When site first documented by the authors, water level was at 3650 feet. Three sets of rather poorly picked steps visible from lake; at water level 3665 feet only highest set still above water and not easily visible (Figure 15). Remnants of log and stone cribbing can be seen on next level. Rocks piled along 6-foot cliff wall make possible ascent to higher ledge. A. L. Lindsay, in his field notes, mentioned that exits at the Jna-Jca contact are often marked by a set of slabs piled up at the bottom of a ledge.

To the right of this obvious stock trail pecked steps lead sharply upward on right side of small alcove; steps still visible at 3665 feet. To the left of the alcove, horizontally placed, deeply gouged footholds and a pecked ledge (now under water) led to a pothole. Alcove not recorded as a habitation and it is unknown if a burial was found there (a tiny piece of bone was identified by T. W. Mathews as an infant's skull fragment).

Navajo Canyon Site 3. Navajo stock trail. No known association. Well-made platform steps, fashioned with a metal tool, follow the saddle between Navajo slickrock domes (Figure 8). Around the corner to the right a flat area contains what appears to be the remains of a corral; finished lumber was used. To the northeast a vertically chipped ledge with associated post holes, and oblique steps guide one around the corner to a chute up which eastward leading steps are cut. To the northwest a series of steps follow the base of the cliff. A barrier of logs and rocks serves as the next clue beyond which is a cairn. To the northeast are several more picked steps, with a supportive log and rock rampart, leading to the Carmel terrace and the upper levels of the canyon.

Navajo Canyon Site 4. Navajo and possibly Anasazi. No known association. When first seen this stock trail was composed of an extensive series of chiseled ledges and steps starting at the water line at 3620 feet and probably lower. At one area, enlarged steps may have been prehistoric in origin. The three sets of steps and

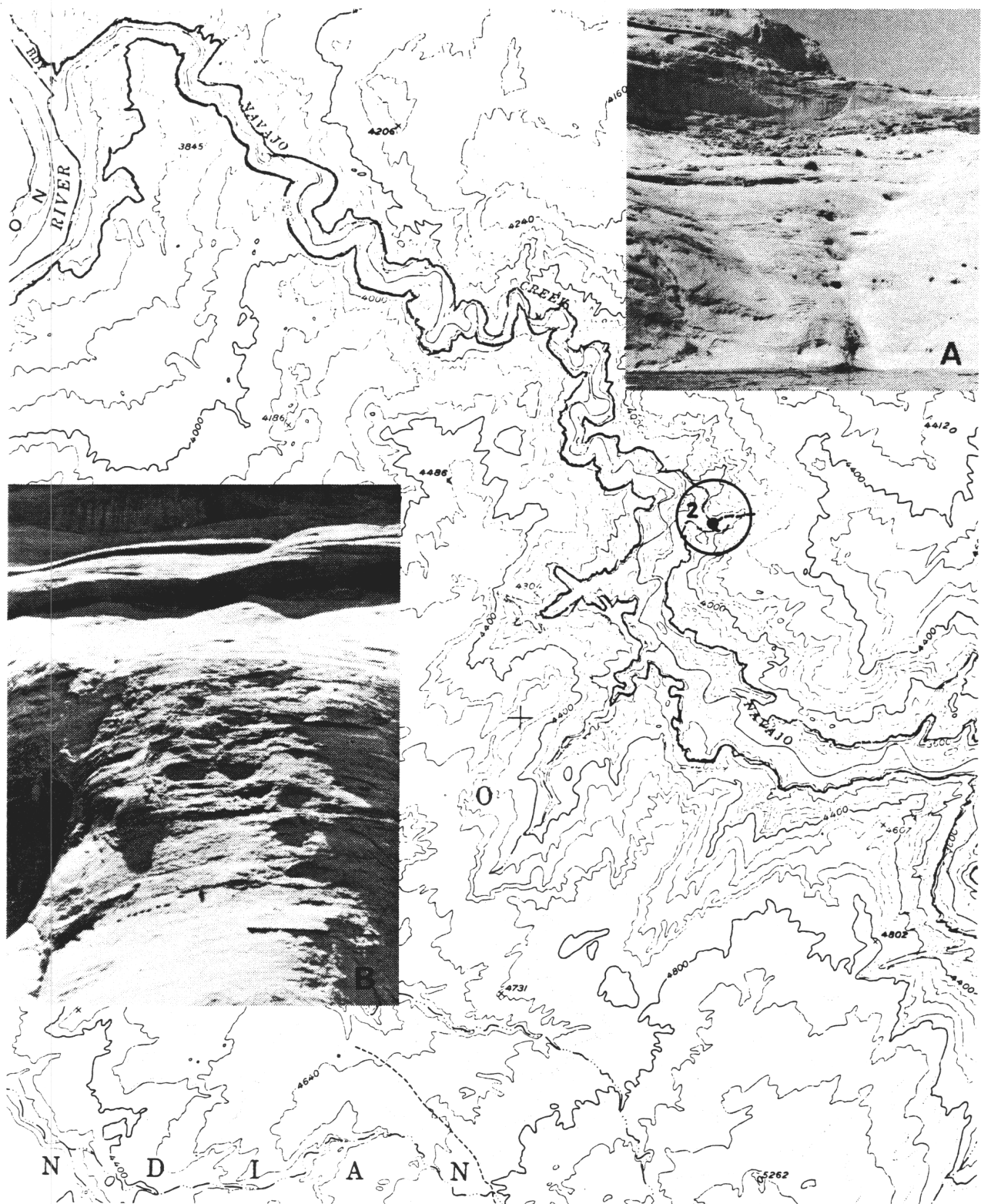


Figure 15. Navajo Canyon Site 2 Navajo stock trail and prehistoric pecked steps. A. General view of stock trail from lake at about 3620 foot elevation. B. Pecked steps at lower left leading from alcove to ridge.

four modified ledges lead across and up a very steep cliff face, around a domed Navajo sandstone area, and out to the grazing areas southeast of Tower Butte (Figure 16). Today the upper series can be climbed, but one should remember that one has to come down again. William Miller (personal communication) mapped Sites 2 and 4, including the left bank exits, in the 1957 survey.

Navajo Canyon Site 5. Navajo. Stock and foot trail. A crossing of Kaibito Creek near mouth of Chaol Canyon (left bank fork of Navajo Canyon). This trail was one of the principal entrances into the canyon for the historic Indian population living in the Navajo Canyon drainages. In 1977, at low water, sheep were still being brought into the canyon down a left bank trail opposite Site 5.

Navajo Canyon Site 6. Explorer and Navajo. Stock and foot trail. On the right bank, nearly at the fork of Chaol Canyon and Navajo Creek, extensive trail construction is still visible at the entrance used by Domínguez and Escalante in 1776.

Of the six sites inventoried, the upper portion of Sites 2-6 will remain above the highest lake level. Site 1 was covered long ago, but the highland section of that trail may still be traced on the Carmel terrace. Three are picked stock trails, possibly following prehistoric foot trails, which were cut off by the rising waters of the lake. One, and possibly two, are trails originally used by explorers and extensively utilized by Navajo sheepherders.

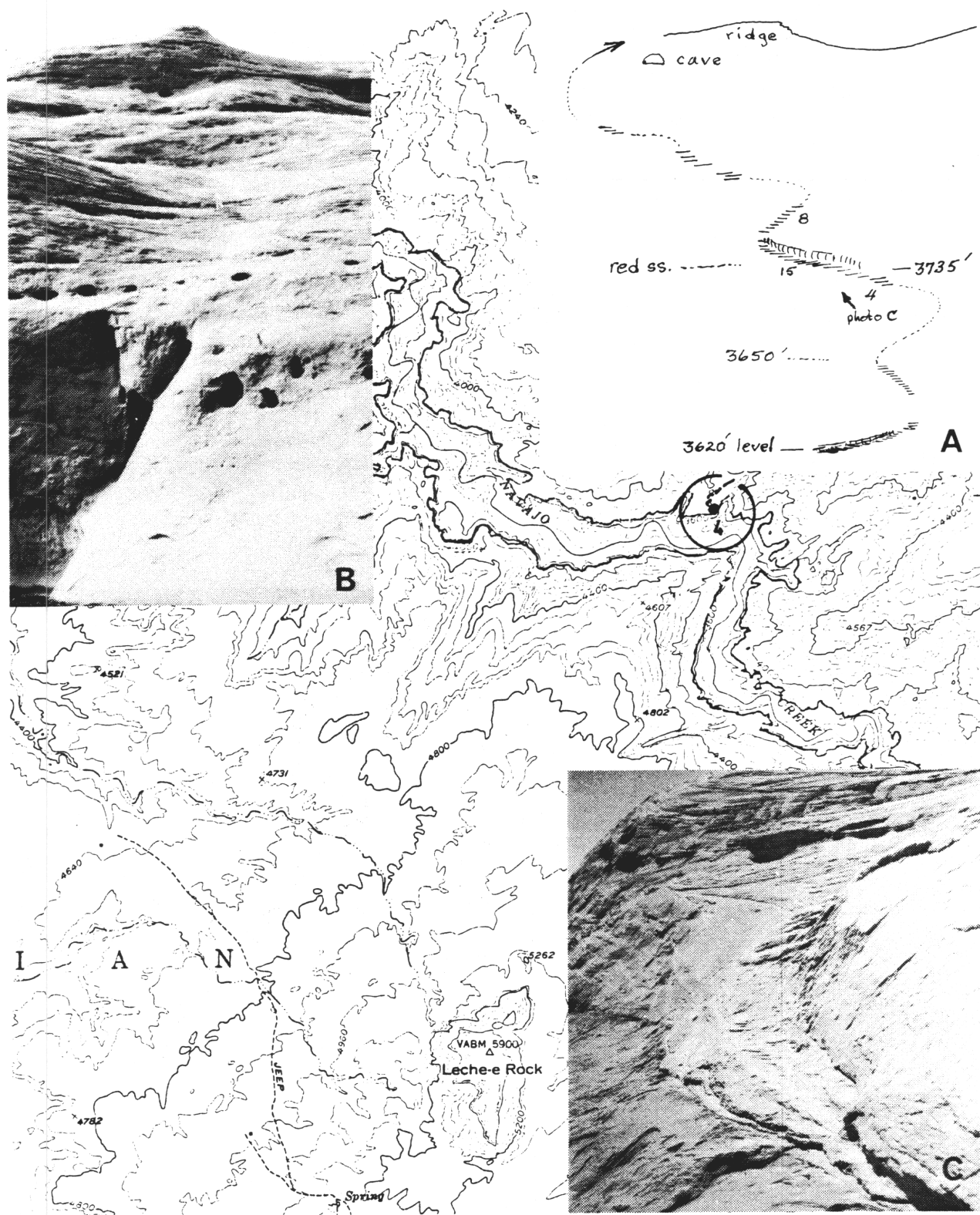


Figure 16. Navajo Canyon Site 4 Navajo stock trail. A. Sketch of general route of steps and trail. B. View of slope from the lake. C. Picked ledge.

Gunsight Canyon

At roughly mile 16 on today's lake maps, the Gunsight Canyon area has been the scene of considerable activity in terms of its use by explorers and missionaries (e.g., Domínguez and Escalante, and Jacob Hamblin); historic Indians (Utes, Paiutes, and Navajos); stockmen; miners; and river and lake travelers. The canyon, while deeply entrenched at its river junction, could be crossed easily about 3 miles from its mouth. Portions of the modern dirt road from Kane Creek to Highway 89 are still above lake level. Of the many trails Gunsight Pass is the only one recorded here.

Gunsight Canyon Site 1. Historic Indian, explorer-missionary, miner, stockman, and other. HS11. Stock and foot trail. The Gunsight Pass trail cuts through a natural pass in the peninsula terminating in Gunsight Butte, making unnecessary the long detour around the butte in order to reach Padre Canyon from Gunsight Canyon. In narrow portions the side wall has been picked to widen it and the scratches of horseshoes could be seen on steep portions of the trail (Crampton, 1960). At lake elevation 3678, water will flow through the pass.

Face Canyon

Face Canyon, approximately 30 miles upstream from the dam, extends southeast from the old Colorado River channel into the highlands between Navajo Canyon and West Canyon. For the first 3 miles, until the first of three tributary canyons was reached, the canyon bottom was easily traveled and all recorded archeological sites were in lower Face Canyon. It was not easy to scale the steep cliffs of Navajo sandstone in which the canyon is entrenched and this explains the many sets of "Moqui" steps found in this area. A "hair-raising trail" (Long, 1966) was still used by the Navajo to bring sheep and goats to the mouth of the canyon until the lake waters covered the sand bar. When David Brugge was there in 1957 a flock of 100 sheep and goats and a horse were glimpsed by companions; the horse was tied at the top of the nearby stock trail.

Face Canyon Site 1. Navajo. NA6475. Navajo stock trail to the Jca platform. Part of a sheep camp complex.

Face Canyon Site 2. Anasazi. NA6476, UU42Sa408. Pecked steps. The University of Utah survey sheets stated that these were "weathered steps cut or pecked up a slick rock knoll...at first bend in Face Canyon on left side (bank) 150 yards from the river." Apparently the 17 or so steps went up the cliff that separated the bar from the upper canyon wall.

Face Canyon Site 3. Anasazi and possibly Navajo. Associated with NA6489. Pecked steps with Anasazi "field house" and a possible agricultural or grazing site nearby. Probably both a prehistoric trail and Navajo stock trail.

Face Canyon Site 4. Anasazi. NA6471. Pecked steps only; unknown as to objective. Steps followed the Navajo sandstone cliff at spur in meander but did not continue to terrace.

Face Canyon Site 5. Anasazi and Navajo. Associated with NA6472. Pecked steps up the slickrock to old Navajo stock trail. A. Lindsay's field notes contain this description:

"...begins on terrace, climbs a stone and log ramp to Jn cliff which has been picked with several long foot-holds and chipped for better footing. Via the ramp a gradual incline on the Jn goes past several cairns, a stone hearth, tent ring, etc., then turns west up a natural ramp incline of Jn, past several pot hole tanks, and ultimately to the Jc terrace."

Prehistorically this trail was associated with many lithic and ceramic sites and historically with a Paiute-Navajo site (NA6494) on Padre Bar.

Face Canyon Site 6. Navajo (recent). Associated with NA6488 Navajo structure. Trail with Navajo sheep camp used at least until 1957. Easy access to top country. Cairns mark trail for a mile or more.

Face Canyon Site 7. Anasazi. NA6477. Several sets of pecked steps to a ledge site. Tool sharpening grooves noted by Brugge (1957).

Face Canyon Site 8. Anasazi. NA6479. Pecked steps in same area as Sites 7 and 9. Foot holds went up a cliff between upper and lower slopes.

Face Canyon Site 9. Anasazi. NA6481. Another set of hand and toe holds in area where there are several. Brugge (1957) says too old to climb and one assumes he meant the steps!

Face Canyon Site 10. Anasazi and Navajo. Associated with Navajo-Paiute site NA6480, probably a sheep camp and the Navajo sweat lodge depicted in a sketch in Brugge's journal (1957). A Navajo horse trail parallels a prehistoric step trail over rolling slickrock to highlands on the left bank. Apparently a natural crossing to NA6482 or Site 14. The Navajo trail followed the ledge around the canyon wall and then went up a side canyon.

Face Canyon Site 11. Anasazi and Navajo. Associated with NA6484, an Anasazi lithic site. A stock trail which led from here to Site 12 at the fork of the Canyon and included pecked steps. In some areas the foot hold trail and the stock trail paralleled one another; in another the "Moqui" trail alone led to higher country. Without more precise evidence this trail would be difficult to find today. Probably follows south rim of Face Canyon fork.

Face Canyon Site 12. Navajo. Associated with Navajo-Paiute site NA6485. A stock trail with a sweat lodge in the vicinity. Site is between the canyon forks, probably the terminus of Navajo portion of trail at Site 11.

Face Canyon Site 13. Anasazi and Navajo. Associated with Anasazi lithic workshop site NA6483. A few pecked steps and a stock trail which led out to the Navajo sandstone slickrock, the Carmel terrace, and Cummings Mesa. Trails are not exact as to placement on the map.

Face Canyon Site 14. Anasazi and Navajo. Associated with Anasazi site NA6482. Five "Moqui" steps led to a pool or pothole. Nearby was a hunting camp and directly across the canyon were steps and a trail to the highlands. A possible horse trail was seen about 100 yards to the southeast.

Face Canyon Site 15. Anasazi and possibly Navajo. Pecked steps associated with a hunting camp and chipping site (NA6478) either late Anasazi or early Navajo. Brugge (1957) suggested that the trail nearby may have been that of mountain sheep.

Face Canyon Site 16. Anasazi and Navajo-Paiute lithic site. NA6473. Pecked steps, possibly part of a longer trail to the upper terrace on the east side of the canyon.

Face Canyon Site 17. Anasazi and Navajo. Associated with NA6470, UU42Sa409. Three sets of pecked steps led from the stream bed to a rock ledge south of an alcove which contained a small room and a cist. From the ledge another series of steps led to the slickrock canyon rim. A nearby precipitous stock trail was used by Navajos at least until 1959 to bring their flocks to the bar.

Of the 17 Face Canyon sites inventoried, five are Anasazi foot hold paths, two are Navajo or Paiute with no obvious prehistoric associations, and ten are Anasazi foot hold trails paralleled or followed by a stock trail. This reinforces the belief that in nearly all cases a trail recognized as a Navajo or Paiute stock trail (other than formalized roads) was initiated and used by the prehistoric inhabitants.

Spring Canyon

Spring Canyon was a short box canyon emptying into the Colorado River opposite Meskin Bar, between Face and West canyons. As the lake level rose it lost its entity almost immediately. As a box canyon, Spring Canyon was not a route to the highlands but its heavily vegetated bar may have been used for agricultural purposes by the Anasazi and for grazing by Navajo sheep.

Spring Canyon Site 1. Anasazi and Navajo. Associated with NA3740 Anasazi shelter UU42Sa403, HS2. Pecked steps and Navajo stock trail. Prehistoric steps enlarged, elongated, and improved to reach the Jna terrace. Gave access to stock trail at Main Channel Site 14 and Spring Canyon Site 3.

Spring Canyon Site 2. Navajo. Stock trail which passed by an Anasazi petroglyph Site NA3742. Trail to Jna terrace.

Spring Canyon Site 3. Navajo and Anasazi. Associated with NA3741 Navajo hogan and complex, UU42Sa404. Good description by Fowler (UU site survey sheet). About 60 feet above the canyon floor a series of steps cut diagonally up the sloping cliff turned at 90-degree angle and continued up the slope. Logs set into the ledge, probably by Navajos.

The three sites in Spring Canyon are a part of the same extensive system of sites and trails found in the Face Canyon drainage. Spring Canyon Site 1 appears to be very much like Wetherill Canyon Sites 1 and 2 in that prehistoric peoples came here from the highlands for a seasonal round of planting and foraging.

Kane Creek

Kane Creek (Kane and Cane are variously used) is now a part of Padre Bay and has lost any special character it might have once possessed. Kane was a 3-mile-long tributary to the Colorado River on its right bank. Although there was not a good river crossing between Kane and Face Canyon on the left bank there were many accesses to the area. An extensive portion of Carmel terrace made it easy to travel along the river bank for a considerable distance. Fresh-water seeps in the right and left forks of Kane Creek provided a dependable water supply. Cane Bar was a favorite camp spot for almost anyone who passed by. Two Anasazi sites with associated pecked steps were recorded by a University of Utah survey crew.

Kane Creek Site 1. Anasazi. Associated with NA6498, UU42Sa447. A prehistoric lithic and ceramic site with pecked steps. A foot trail led from here northward.

Kane Creek Site 2. Anasazi. Associated with NA6499, UU42Sa-258(?), lithic site. Pecked steps. In the Pleistocene gravel beds which cap the Carmel and spill over into talus slopes along the main channel and at the mouths of canyons was found the material needed by the prehistoric occupants of perhaps a very large area for manufacturing stone tools. Lithic sites such as these two in Kane Creek

were common in lower Glen Canyon; in fact they were recorded more often than any other type of site.

West Canyon

West Canyon is located about 37 river-miles from the dam on the left bank of Lake Powell south and west of Cummings Mesa. Vertical walls of 300 to 400 feet limited access in the days when prehistoric peoples and historic Indians trod the canyon floor. Pecked steps (West Canyon Site 1) led from the bar at the canyon mouth up a very steep wall to the rim, but no further evidence of egress from the canyon was present until one came to an area where the Navajo slickrock sloped enough to the canyon floor to allow an easier access. Several sites, both Anasazi and Navajo, were located at this point. All are now under water except for the upper portion of a Navajo stock trail (West Canyon Site 2). Farther up the canyon another sheep trail leads upward on the left bank (West Canyon Site 3).

West Canyon Site 1. Anasazi. NA6459, HS31. Pecked steps. Thirty toe and hand holds up steep cliff covering a distance of 35 feet; also two or more parallel sets of steps, some heavily weathered. They apparently led out of the canyon rather than to a specific site.

West Canyon Site 2. Anasazi and Navajo. Pecked steps and stock trail. This site is treated as a unit; it was a cluster of prehistoric and historic sites NA6423, 6423N, 7140, 7141, 7144, 6457, and 6458 (Long, 1966, and Lindsay's trail system notes). Features at these sites include pecked and picked steps, water-storing potholes, a petroglyph panel, a large Anasazi site, several Navajo sheep camps, possible agricultural sites, much cultural debris, and a network of criss-cross trails. Of these, NA6423N is thought to be the stock trail, the upper portion of which can be seen and followed today. Originally it was described as pecked steps leading to a pothole, supplemented by a log ramp and picked steps. The trail began in the creek bottom and climbed to the Navajo slickrock

where the course levelled out and was difficult to follow but eventually led to the Carmel terrace (Figure 17).

When first seen by the authors, badly eroded picked (not pecked) shallow platform steps on the northwest side of a knoll led up the slickrock. The unmarked trail then turns toward the southwest-facing cliff wall where a rough descending stairway is present. To the right of this stairway, several sets of picked steps lead down the southeast-facing slope and across a depression which is now a tiny bay of the lake. On the west-facing slope across this pool of water the fourth set of steps is clearly visible today. All but the first set are well above the 3665-foot lake elevation. A fifth set of steps is difficult to find. Eighty feet beyond the fourth set of steps, the trail curves to the left and one heads northwest gaining altitude and keeping to the left of a large flat-topped promontory on the skyline. One does not turn right at the first drainage but continues north-northwest around the next ridge and then turns right. From here, the final set of steps can be seen to the northeast on a smooth rock slope. The wide steps are duplicated to one side--one set is badly eroded. Above this final set of steps one crosses a sand dune at the base of the Carmel platform. A tumbled wall of rock slabs delineates the trail as it passes from the sand dune to the Carmel terrace. Long's map (1966) shows a trail which heads from this area northwest to the main channel and connects with the Dungeon Canyon trail. One can also follow the Carmel platform to the southeast for a considerable distance but there is no evidence of a trail out to Cummings Mesa from here.

West Canyon Site 3. It is with some hesitation that this stock trail is included because the exact location is not known, although it is placed upon the map. Traveling along the canyon bottom above the lake level in May of 1976 (about 3665 feet) a definitely man-made cribbing was seen at the base of a cleft which formed a natural trail. A feasible pathway was followed to a grazing area still within the Navajo sandstone. Frank Wright (personal communication)

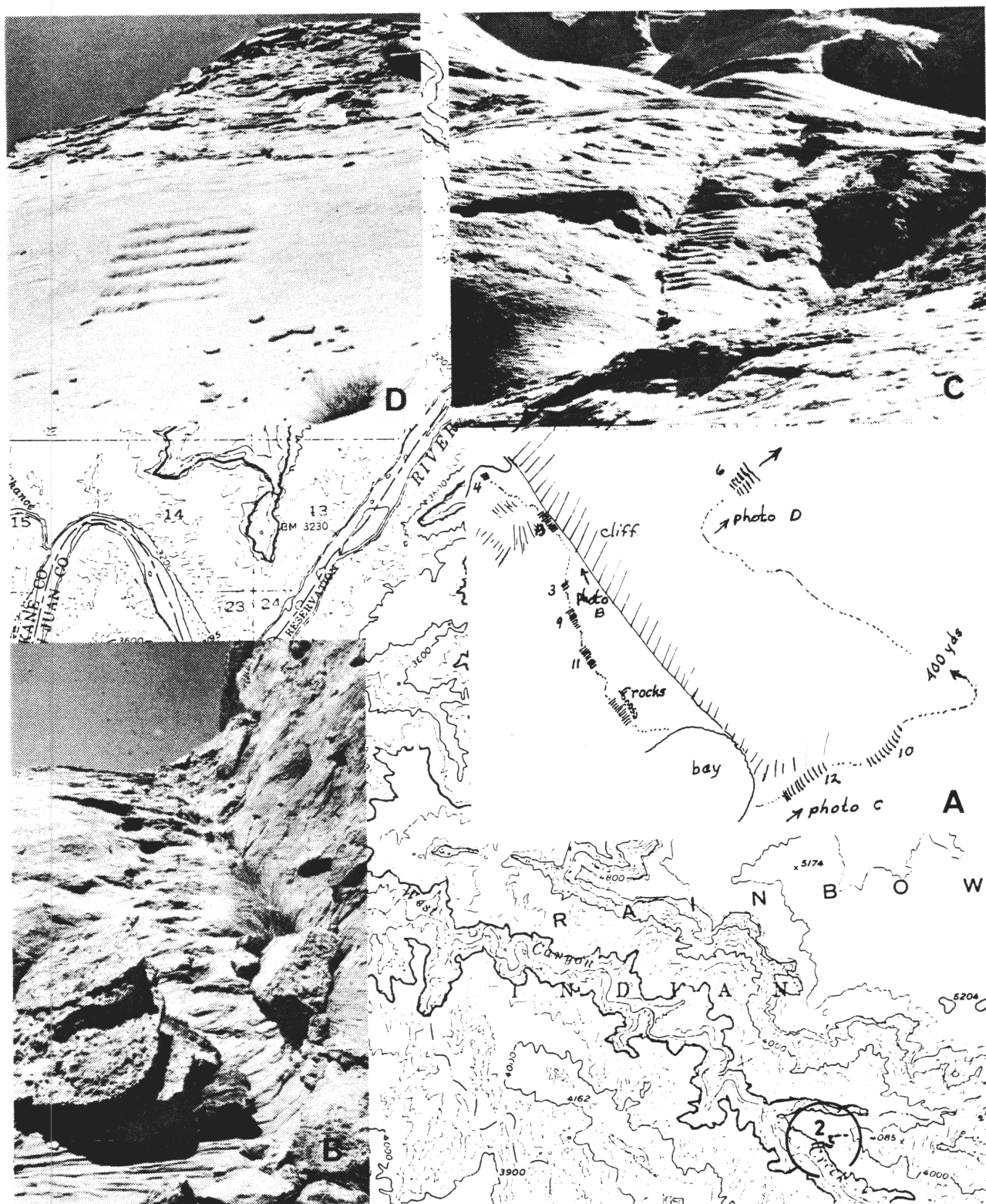


Figure 17. West Canyon Site 2 Navajo stock trail. A. Sketch of general route. B. Steps and trail along cliff wall. C. Steps cut into west-facing slope. D. Uppermost set of steps cut at two different times.

thought that the grazing area had been used within 3 years but the trail probably not for 10 to 15. There is a possibility that sheep were taken to West Canyon for water and perhaps all the way to the river in pre-lake days.

Of the three (one multiple) sites in West Canyon, one is definitely Anasazi, one is definitely Navajo, and the other is a multiple-use site probably used for over 300 years. The pecked steps at the mouth would provide an access trail from the mouth to the highlands on the north side or right bank of West Canyon. This would make possible overland travel which was faster and might be preferred by the Anasazi. Navajo, with their sheep, would more likely, in this area, come down the creek bed, finding access elsewhere to the Carmel terrace grazing.

The multiple-use site, situated where the steep cliffs softened and sloped to the creek bed, has been heavily utilized by both the Anasazi and the modern Indian. Trails apparently crossed the creek in several places as well as linking the immediate camp or living areas. Access to the grazing area on the Carmel platform on both sides of the canyon was possible.

The third trail is probably representative of stock trails which led from the Navajo or Carmel platform at the upper drainages of West Canyon into the canyon bed. Several barriers were found in the creek bed or on trails by the Museum of Northern Arizona survey crews which would have served to corral flocks of sheep. All Navajo sites on the Carmel terrace above West Canyon were interconnected by well-defined sheep and horse trails (Lindsay's field notes, 1959).

Dungeon Canyon

Dungeon Canyon, at Mile 43 and across the river from the Rock Creek drainages, was so deeply entrenched at its mouth that no trail led up the canyon bed. However, with the rising of the lake level, one can easily reach the Carmel platform which stretches along each

rim. Several trails in the vicinity reached Cummings Mesa to the south and perhaps the Kaiparowits Plateau to the north. One of these trails has been chosen as an example.

Dungeon Canyon Site 1. Anasazi and Navajo or other historic Indian. Stock and foot trail. Can be followed along eastern rim of Dungeon Canyon to base of Cummings Mesa, up talus slope, and back and forth along ledges to top of the mesa. Carmel platform wide and easy to travel.

There is some assumption made here that this was a prehistoric trail also; the trails marked on Long's map (1966) do not include one on the east side of Dungeon Canyon. The extensive trail system in this area documented by Long includes trails which cross and link with others to Cummings Mesa and probably to the Kaiparowits area via the Rock Creek canyons. One trail passes Main Channel Site 22 and heads south to link with West Canyon.

Rock Creek

The three forks of Rock Creek meet and enter the lake between Mile 41 and Mile 42. The headwaters of the three channels have cut deeply into the southwestern tip of the Kaiparowits Plateau. As mentioned in the Dungeon Canyon discussion, prehistoric Indians undoubtedly used these creek beds as routes to the Colorado River, and modern stockmen brought their flocks or herds to grazing areas on the river bars.

Rock Creek Site 1. Anasazi. Associated with NA5371. Pecked steps affording access into rock shelter with eight or more rooms. Close to Colorado River.

Rock Creek Site 2. Anasazi. Associated with NA5370. Pecked steps led to top of 120-foot cliff; habitation site 1 mile distant. About 2 miles from Colorado River.

Rock Creek Site 3. Anasazi. Associated with UU42Ka268. Hand and toe holds led to shelf at rear of shelter.

Rock Creek Site 4. Anasazi. Associated with NA2688, UU42Sa265. Pecked steps going up cliff to flat shelf; steps, remains of walls, and pictographs still above water at 3665 feet and above. These steps do not appear to be necessary to reach the shelter. A. Lindsay (J. Frank Wright, personal communication) suggests that such steps might be "practice steps" for children.

Wetherill (Catfish) Canyon

The mouth of Wetherill Canyon is located between Mile 44 and Mile 45 on the lake maps of today. In pre-lake days, a stream ran intermittently and streamside vegetation was abundant. Old alluvial terraces suggested possible agricultural sites. At present the wide entrance is flanked by domed terraces backed by the outer gorge cliff walls.

Wetherill Canyon Site 1. Anasazi. Associated with NA6450, a prehistoric campsite. Pecked steps. Foot trail encircles site. Used later by Navajo-Paiute, also as a camp, but no enlargement of steps.

Wetherill Canyon Site 2. Anasazi. Associated with NA6451, an Anasazi campsite and lithic workshop. Pecked steps in the ledges which must be climbed to reach the site. Access to the terrace above is along a slippage or fault line where potholes have formed.

The prehistoric sites associated with these steps seem to indicate that the Anasazi were planting crops and collecting plant products in this area (Adams, Lindsay, and Turner, 1961) as well as using the Pleistocene gravel materials for the fashioning of tools. Ceramic remains indicate association with, or influence from, the inhabitants of the Kaiparowits Plateau. Occupation by the Navajo or Paiute was probably post-1900.

Mountain Sheep (False Entrance) Canyon

The Mountain Sheep extension of the lake is entered at Mile 48. The entrance is flat and broad and bordered by domed terraces

of Navajo sandstone. At the canyon mouth the steep walls of the outer gorge are close but they fan out as one moves up the canyon so that the plateau or platform often found at the lip of the inner gorge is present.

Mountain Sheep Site 1. Anasazi. NA7510(?). Pecked steps led from river bank to facilitate access to Carmel platform.

A cluster of habitation and lithic sites across the canyon at the mouth of Mountain Sheep may explain these pecked steps. A short foot trail from the site is indicated on Long's map (1966).

Forbidding Canyon and Bridge Canyon

Forbidding Canyon (and Aztec Creek), at Mile 54.5, and Bridge Canyon are deeply incised into the Navajo sandstone and the lower canyons are narrow throughout much of their length. Aztec Creek's perennial stream may have been partly responsible for the cluster of 10 aboriginal sites between the mouth of Forbidding Canyon and its confluence with Rainbow Bridge Canyon. These sites rested upon talus slopes or the Kayenta shelf at the base of the Navajo sandstone cliffs.

Forbidding Canyon Site 1. Anasazi. Associated with NA3732 prehistoric architectural site. At western end of ledge where site is located, hand and foot holds ascend to point from where Navajo slickrock can be reached. Located at mouth of canyon.

Bridge Canyon Site 1. Anasazi. No known association. Pecked steps up steep cliff wall at last bend before reaching the Rainbow Bridge dock (1977). On right bank.

The mouth of Forbidding Canyon was the river terminus of a prehistoric and historic foot trail which led all the way up Forbidding Canyon to Cliff Canyon where it followed the Cliff Canyon branch to its head and turned toward the western flank of Navajo Mountain. The Bridge Canyon trail proceeded up the creek bed until just below Rainbow Bridge where it divided east and southwest, one to meet the Oak (Secret) Canyon trail and one to link with the Cliff Canyon trail. The Site 2 hand and foot holds are almost at this division point.

Summary--Glen Canyon Dam to Forbidding Canyon

Seventy-two foothold sites or stock trails were documented from Glen Canyon Dam to Forbidding Canyon, including the latter. The majority of these were the cup-shaped pecked steps of the pre-historic Kayenta Anasazi, or the platform steps fashioned with a pick by Navajo-Paiute sheepherders. The steps led from the river or canyon beds to lithic or habitation sites (permanent or temporary) and to the slickrock and terraces between the river and the highlands. There was some overlapping; the ford used by the Franciscan fathers, Domínguez and Escalante, was also used by many other groups. The utilization of Glen Canyon's resources by miners is demonstrated by the still-visible Klondike steps. The heaviest concentration of sites is in the Face-Spring canyon area, on the main channel between Labyrinth and Forbidden Canyons, and in the Rock Creek-Dungeon Canyon crossroads.

Map 2 - Forbidding Canyon to Bullfrog Bay

Tributary canyons in this section of Glen Canyon were deeply cut into the sandstone cliffs of the inner gorge. Several of the left bank tributaries contained the deep alluvial deposits sought by the Kayenta Anasazi as farming terraces, and the Pleistocene gravels which furnished materials for the shaping of stone tools.

A portion of this area is affected by the Waterpocket Fold which has uplifted the overlying strata exposing the Chinle formation, primarily in the Rincon area. The disappearance of the alcove- and ledge-forming sandstones and the presence of rock-slides and dangerous talus slopes would discourage the establishment of habitation sites.

Main Channel

Main Channel Site 30. Anasazi and miner. NA6442, UU42Sa387, HS103. At the river bank ten hand and toe holds in steep cliff at head of Music Temple Bar. Enlarged, probably by miners. Today high on the cliff many prehistoric foot holds are visible on what is today the left bank of Lake Powell just north of Music Temple Canyon.

Music Temple Canyon was a box canyon and, until the waters of the lake rose high enough, access into the upper reaches was possible only by crossing the high, rounded sandstone cliff to the right of the canyon mouth. Much mining activity took place on the bar at the base of this cliff. One could follow the steps discernible today up an extremely steep slope to the very top of the cliff and presumably one could then move along the Navajo sandstone plateau or drop back down into the canyon. Several trails lead from here into the Navajo Mountain and San Juan area.

Main Channel Site 31. Explorer-missionary, miner and other. HS33. The famous Hole-in-the-Rock wagon road was made by Mormon pioneers while traveling to the San Juan in 1879-1880. David Miller (1959) and Gregory Crampton (1962) describe this incredible feat

in detail. The upper portion of the roadway is clearly visible from the lake but it is considerably changed from its original state. Large sections of the cliff have fallen into the slot through which the road was built. In addition, in 1899-1900 the Hoskaninni Company, a mining enterprise, cut steps into the solid rock for about 1/4 mile and converted the road into a trail for packers and horses. The steep road was used only until the Halls Crossing ford was established upstream, but the passageway itself served as a foot, pack, and stock trail for Indians, gold miners, traders, stockmen and other travelers. A gravelled road leads today to Escalante, Utah.

Main Channel Site 32. Miner. HS141. Stock trail, Jackass Bench. Pack animals, probably. Opposite Ribbon Canyon and about 1 mile upstream from Hole-in-the-Rock on right bank. Several sets of picked steps and a chipped ledge trail detectable from the lake (Figure 18). Farther up the slickrock is an area roughened by many separate pick marks in the surface. Cairns lead to the Carmel terrace, and the trail from there is to the Hole-in-the-Rock road to the town of Escalante.

Jackass Bench extended from Hole-in-the-Rock north along the river bank for over 2 miles and was a prime grazing area for stock. In 1899-1900 the Hoskaninni Company partially completed a road to Jackass Bench and probably built the stock trail as well. A trail also followed along the river terrace from the Escalante River mouth to Jackass Bench (Beck, 1946).

Main Channel Site 33. Stockman and miner. HS155. One example only of several stock trails that reached the canyon floor in the Rincon area. This one can still be seen between Miles 84 and 85 on the east horn of the Rincon, below the road constructed during the uranium boom. Crampton (1962) identified many of these trails.

Main Channel Site 34. Stockman and miner. Several trails are described by Crampton (1962) in the Rincon and Iceberg (Wilson) Canyon area and Iceberg Canyon was reportedly utilized by San Juan

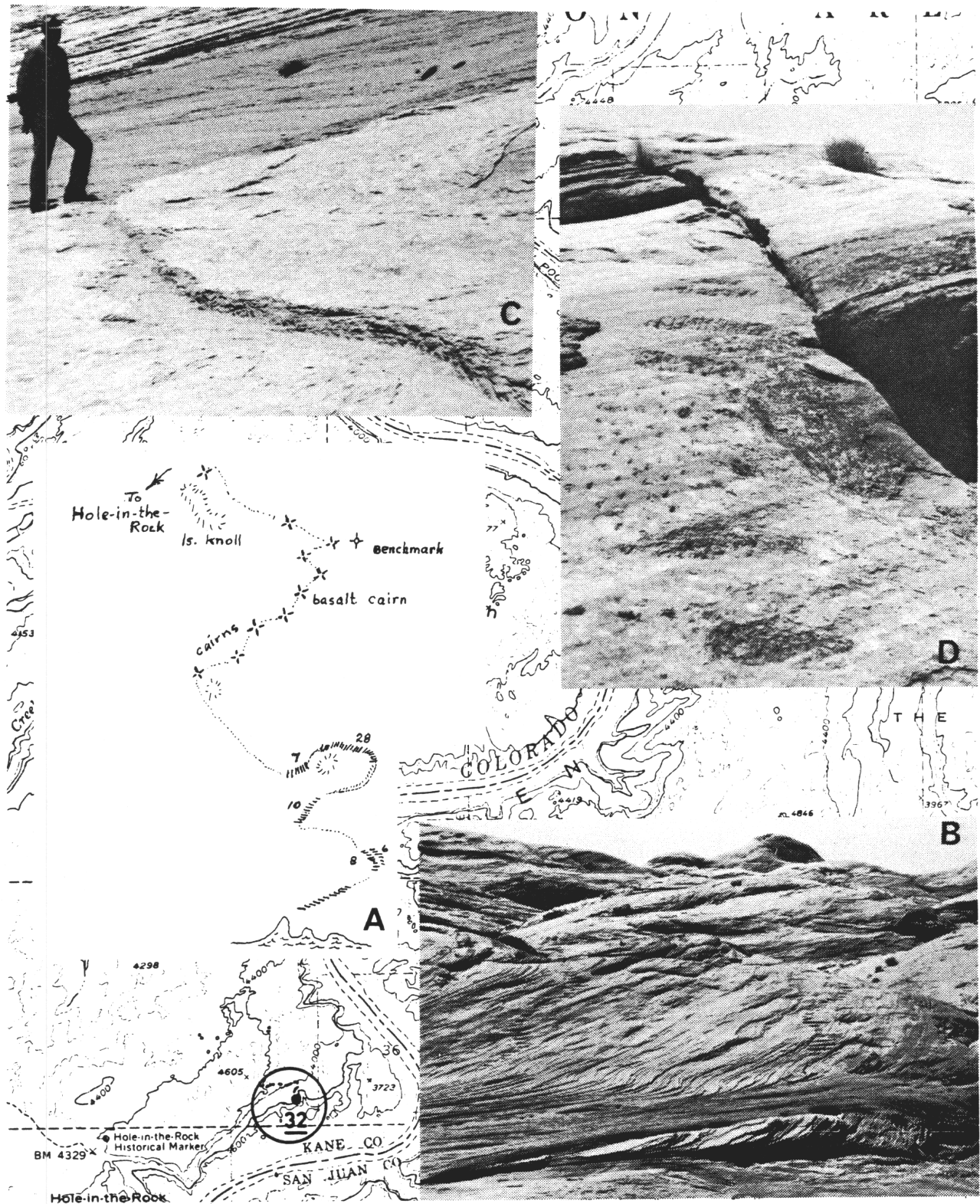


Figure 18. Main Channel Site 32 Jackass Bench miners' steps and trail. A. Sketch of trail. B. View from the lake of picked steps and ledges. C. Type of picked ledge on slickrock slope. D. Unusual method of roughening slope with separate pick marks.

County cattlemen. The Kayenta bench, which leads upward from the mouth of Iceberg Canyon, provides an easy route to the south. On the face of a large sandstone slab are two messages (Figure 19). One warns cattlemen to watch their cattle closely and requests that the writer's horses be left alone, and the other rather poignantly points out that the Indians are not stealing cattle now.

Main Channel Site 35. Miner and historic Indian. HS93. Trail on right bank of Colorado opposite mouth of Iceberg Canyon, reportedly used by prospectors, Indians, and cattlemen (?) (Crampton, 1962). May have tied in with a well-established trail between the Escalante River and the Baker Ranch at the head of Halls Creek, as well as with those in Iceberg Canyon.

Main Channel Site 36. Miner. HS37. Picked steps. At about Mile 96, 1 mile below Lake Canyon, on the right bank, begins the long series of steps known as the Schock Trail (Figure 12). An 80-foot dugway is now under water. At 3665 foot elevation, steps lead from the water's edge. If one goes north-northwest from the top of this set and crosses the slickrock domes, one comes upon an incredible 58 steps carved into the slope. A 30-foot dugway, or chipped ledge, precedes another set of steps. Northward from the last set is a series of 5 cairns. From the last of these one can follow a meandering course across the plateau and upwards to the Carmel platform capping Iron Top Mesa. From here it is supposed that one could head Lost Eden Canyon and proceed easily to the Baker Ranch trail.

Oak Canyon

There appears to be a general confusion concerning Oak Canyon, Oak Bay, Juniper Canyon, and Secret Canyon. Leaving all that behind, for this study the large bay opening off the lake on its left bank at Mile 56 is called Oak Bay. The tributary which runs into Oak Bay at its head is called Oak Canyon. The tributary canyon to the right of Oak Bay as one enters it is designated as Secret Canyon, even though it is called Oak Canyon on the USGS map. The entrance

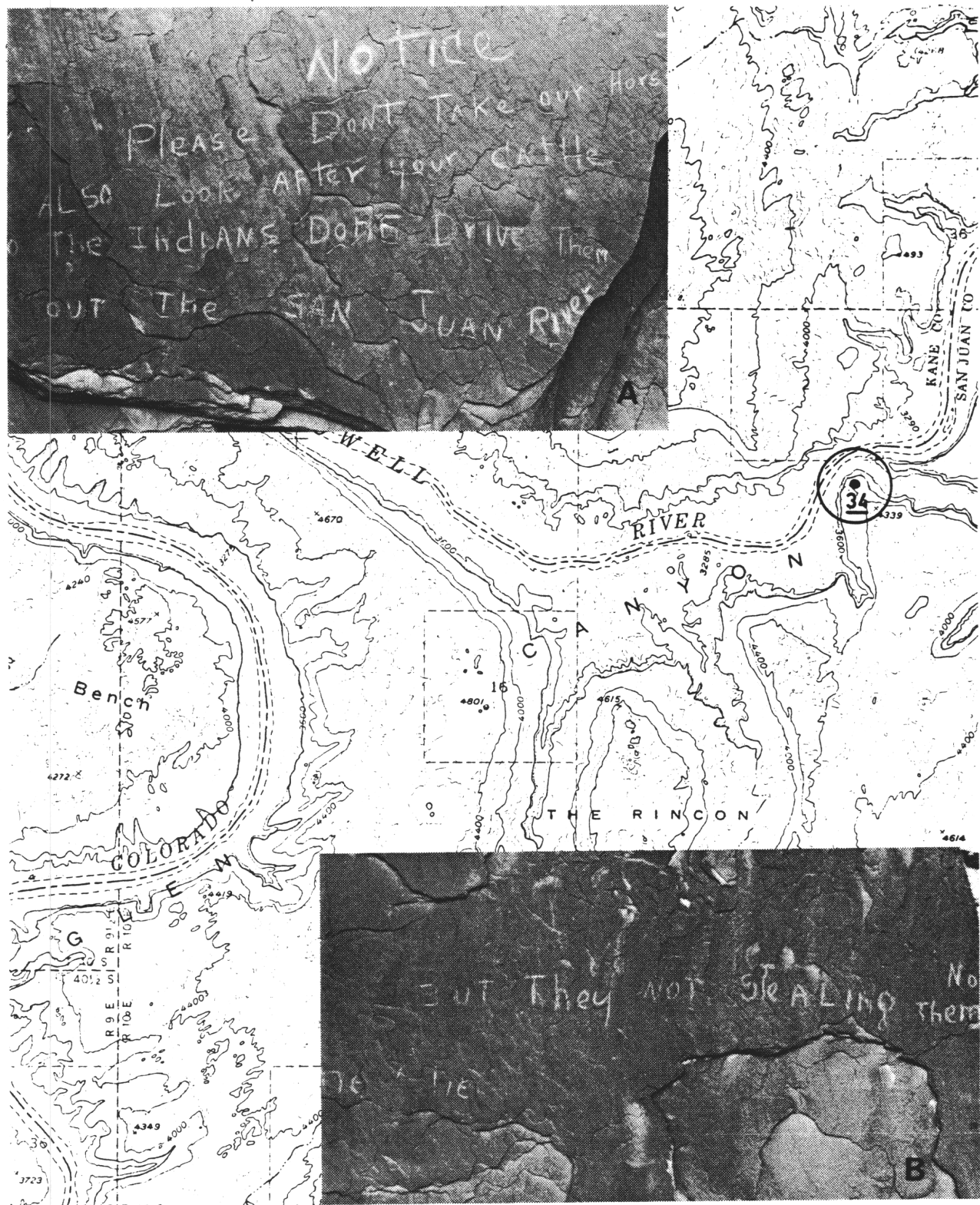


Figure 19. Main Channel Site 34 stock trail. A. Message scratched on rock face. B. Apparent reply.

to this complex was at one time a large boulder-strewn delta, surrounded by much talus and alluvial material, which was quickly drowned by the rising lake waters.

Oak Canyon Site 1. Anasazi. Associated with NA7136, a slump boulder room with a petroglyph panel. Pecked steps and a crude ladder. Linked with Oak Canyon Site 2 by trail.

Oak Canyon Site 2. Navajo. Associated with NA7139, an Anasazi site with several architectural features including a roasting pit. Stock trail which led out of the canyon to the highlands; may have followed a prehistoric route.

Oak Canyon Site 3. Anasazi. UU42Sa390. Pecked steps at "first jump-up in short runoff canyon 20 yards south of mouth of Oak Creek Canyon" (Fowler, 1958 site survey sheet). There are 16 steps cut in slickrock. Appears to be right on the short trail originally plotted by Long (1966) which crosses to the river.

Oak Canyon Site 4. Navajo and possibly Anasazi. No certain association. Pecked and picked steps. An extensive series of steps on the right bank. Lower set just above the 3645-foot water level. These follow around the south knoll of the sloping Navajo sandstone to join the upper set which will always be above the lake level (Figure 20). Portions of both the lower and upper sets may be Anasazi in origin; they are fairly close to several prehistoric sites. Three sets of three deeply gouged steps, an arrow pointing upward chipped into the sandstone, and remains of both large and small post holes complete the lower complex. One of the post holes still contains a shim or fragments of wood. The upper set contains almost every kind of picked step known--large unevenly shaped pock-ets, picked out ledges, and the wide well-made stairways common to some Navajo and most miners' trails.

Access from Oak Canyon to both the river and the highlands presented no problem. Trails also led to Forbidding Canyon. Of the four sites inventoried here two are Anasazi and two are essentially Navajo. However, the ladder at Site 1, and the closeness

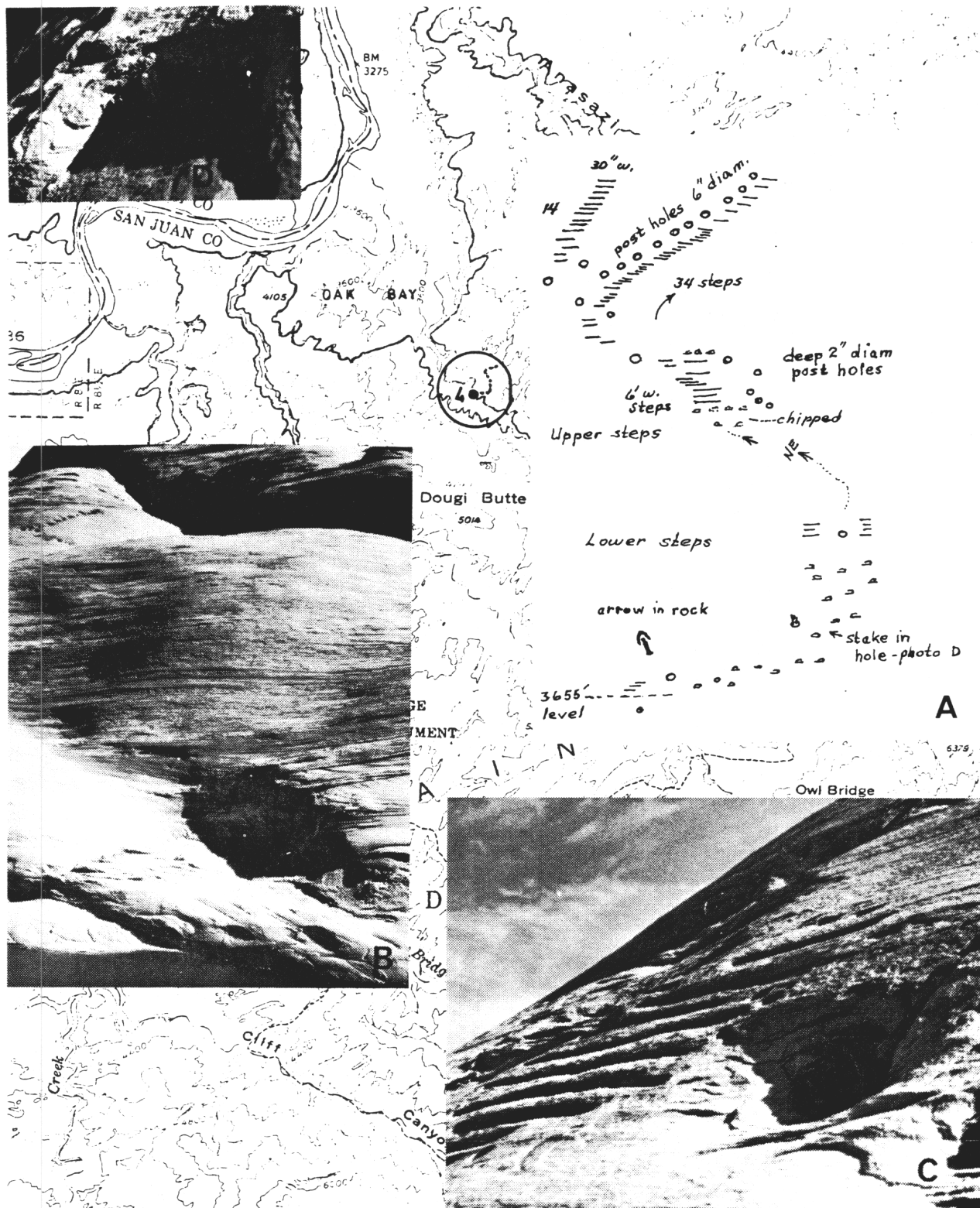


Figure 20. Oak Canyon Site 4 Navajo stock trail and prehistoric steps. A. Sketch of route and features. B. General view of steps on cliff wall. C. Detail of picked steps and post holes. D. Post hole with remains of stake or peg.

of the trail at Site 3 indicate a probable re-use of prehistoric trails by Navajos who were obviously using the area. It would be difficult to make an arbitrary and final decision about any of these if one were looking for a "pure" site.

Secret Canyon

As one enters "Oak Bay," a large bay formed by the rising lake waters at Mile 56, a narrow, almost hidden, canyon leads off to the right. The drainage into this finger of water is called Oak Canyon on the USGS maps. This, however, is the canyon here called Secret Canyon, and the Oak Canyon sites are located in the canyon that enters Oak Bay at its head. So much for confusion in various maps!

Secret Canyon Site 1. Anasazi. No known association. Pecked steps and prehistoric trail which ascended from the canyon bed up the pecked steps across the slickrock and down to the mouth of Forbidding Canyon. Trail also followed Secret Canyon itself south-eastward toward its headwaters. This provided access into the Navajo Mountain area.

The steps recorded were apparently prehistoric, and it is not surprising that the Navajo who used Oak Canyon and what is today Oak Bay did not penetrate Secret Canyon--it looks difficult and was unnecessary as there were such good accesses from nearby areas. For a prehistoric Indian who wanted to cross to the mouth of Forbidding Canyon without detouring by the river it was a different matter.

Twilight (Navajo Creek or Navajo Valley) Canyon

Twilight Canyon is a narrow, twisting gorge opening into Lake Powell on the north side between Miles 55 and 56. The floor beyond the lake level is boulder-strewn and the precipitous cliffs allow no access to the rim in the lower reaches of the canyon.

Twilight Canyon Site 1. Anasazi. NA6893. Pecked steps.

Twilight Canyon Site 2. Anasazi. No association. Twelve hand and foot holds going up cliff face from stream bed at the first saddle beyond lake level at 3665 feet. The steps on the east bank

of the north fork are approximately 700 yards from the maximum water level at 3665 feet.

From the edge of the lake at this elevation (and at higher elevations, of course) one can walk up the creek bed to where it widens considerably at its head lending credence to the proposal that this may have served as a route to the Kaiparowits Plateau and the Escalante River.

Anasazi (Mystery) Canyon

At Mile 59 Anasazi is a long gorge with a narrow entrance, steep walls, and high round domes. Steps provided access to a bench 40 feet above the present canyon bed (pre-lake) but otherwise the purpose was unknown, hence the name mystery.

Anasazi Canyon Site 1. Anasazi. NA6874. Pecked steps. Left bank near downstream end of bar, 15 toe and hand holds, badly eroded.

There appear to be no good routes of access to the highlands in the vicinity of these steps, but from the south side a route over the slickrock to the Cummings Mesa-Navajo Mountain area was feasible. Also, once one reached the bench and traveled around the dry waterfall which blocked access on the present floor (Crampton, 1960) it was possible again to travel up the canyon bed.

San Juan River

The waters of Lake Powell will stretch 71 miles up the San Juan River arm. Adams and Adams (1959) published an inventory of prehistoric sites on the lower river, and Crampton (1964a) documented the many historical sites. This inventory of steps and trails on the San Juan is but a sample and includes those immediate to the lake shore and up to Desha Creek only. A complete inventory of the trails of this region, in particular those of the area south of the San Juan on the Navajo Indian Reservation, would necessitate another publication.

San Juan River Site 1. Navajo-Paiute and possibly prehistoric. Stock and foot trail 1/2 mile downstream from mouth of Nasja Creek. Trail went up the talus onto the well-vegetated Kayenta bench then followed along the platform nearly to Nasja, and turned up a side canyon in the direction of Navajo Mountain (J. Frank Wright, personal communication). Figure 14 illustrates badly eroded but still visible trail.

San Juan River Site 2. Navajo-Paiute and prehistoric. Stock and foot trail. Probably a continuation of, or link to, the trail (Site 1) beginning downstream from Nasja Creek. Intersects with major horse trail circling Navajo Mountain on the southwestern and southern flanks. A prehistoric pathway on the Museum of Northern Arizona trail maps parallels this trail in one area.

San Juan River Site 3. Navajo-Paiute and other. Trail Canyon stock trail on left bank at Mile 13 (Figure 13). A switchback trail, from the Kayenta bench, much used by Navajos and others. Government-improved in the 1930s. A link in the trail which continued across the San Juan, up Wilson Canyon to Wilson Mesa and to the Hole-in-the-Rock trail. From there across the Colorado River by boat to the trading post at the base of Hole-in-the-Rock or on to Escalante, Utah.

San Juan River Site 4. Anasazi and Navajo. No known association with structure. Navajo foot trail and pecked steps. Short distance downstream from Desha Creek, left bank. Log ladder, a few prehistoric steps, then trail goes up talus to rim.

San Juan River Site 5. Navajo-Paiute. Stock trail which followed up Desha Creek and out to the Navajo Mountain area. Trail also from mouth of Desha Creek to Cha Canyon downstream.

There are many more sites up the San Juan which were documented as having some sort of pecked or picked steps affording access to the sites or to the benches along the river (Lindsay's field notes, 1959). There were scattered agricultural colonies in the San Juan in prehistoric times; their clustering may be

attributable to the fact that routes from the highlands were possible only in specific places. There are stretches for as long as 8 miles where no access from the rim is possible (Adams and Adams, 1959). Routes through Nasja, Cha, and Desha canyons, and canyons up river, from the mesas to the river are possible and were used by Navajo-Paiute as stock driveways. By utilizing alluvial terraces, sand dunes, ledges, and the Kayenta bench one could travel along the river for considerable distances.

Cottonwood Canyon

The Mormon colonizing expedition which crossed the Colorado River by way of Hole-in-the-Rock used Cottonwood Canyon as an access route to Wilson Mesa and Grey Mesa on their way to Bluff, on the San Juan River.

Cottonwood Canyon Site 1. Mormon pioneers and others. Remains of wagon road which went to Bluff, Utah, by way of Wilson Mesa, Clay Hill Pass, the Elk Mountain area, and Comb Wash. Can still be followed.

Crampton (1962), Miller (1959), and Perkins, Neilson, and Jones (1968) have described the Hole-in-the-Rock crossing and the subsequent hazardous and difficult trek to Bluff where the exhausted pioneers made the decision not to proceed to Montezuma, their original destination.

Escalante River

The beautiful Escalante River tributary enters Lake Powell at Mile 73 on the right bank. The lake will flood the river canyon for approximately 20 miles. Within that 20 miles five major canyons enter the lake on its right bank and a number of short tributary canyons on its left. The whole Escalante Basin has been the scene of varied human activity undoubtedly since before the Anasazi painted the famous panel of pictographs on the wall of a rock shelter in Davis Gulch.

Escalante River Site 1. Stockman, Government. Horse ladder. On Escalante Channel between Clear Creek and Davis Gulch, right bank (Figure 21). High up on a sharply sloping ledge is the first of a series of steps picked from the rock. The trail goes southwest up the cliff and continues southwest, in a series of five sets of steps, to the Carmel platform. The second set cuts around the lower end of a knoll or ridge and then follows a sandy, grassy depression to the first of the last three sets. Above the fifth set, on a gradual slope, there are several ways to reach the terrace. A jeep trail from the town of Escalante has for some time reached the top of this trail. Government agents used these stairs (called a horse ladder by some) to reach the gaging station in the Escalante channel. J. Frank Wright (personal communication) thinks that cattle could have been brought down here easily enough as there was once a huge talus slope that reached to the ledge. The scar of this talus slope remains--it has slumped into the lake as have so many others. Cattle would have been taken down the river bottom and out on the left bank to the grazing areas on Pollywog Bench east of the lower Escalante.

Escalante River Site 2. Anasazi. Pecked steps (Davis Gulch) associated with UU42Ka184, an occupation area in a rock shelter. No structures. Hand and foot holds to shelter.

Escalante River Site 3. Anasazi. No known association. Pecked steps (Fiftymile Creek) which lead up over the steep wall to an alcove and to an easy trail to the canyon rim. (Figure 3).

Escalante River Site 4. Anasazi. No known association other than with Site 3. Pecked steps in Fiftymile Creek. These are faint and eroded and lead to a pothole (Figure 4) around the corner from the hand and toe holds which climb the cliff at Site 3.

Escalante River Site 5. Anasazi. Pecked steps. Associated with UU42Ka199 rock shelter, apparently a hunting camp. Located in small left bank tributary nearly opposite Willow Creek. Other sites in area. Steep slope to the shelter could be traversed; foot holds led to the Carmel terrace above.

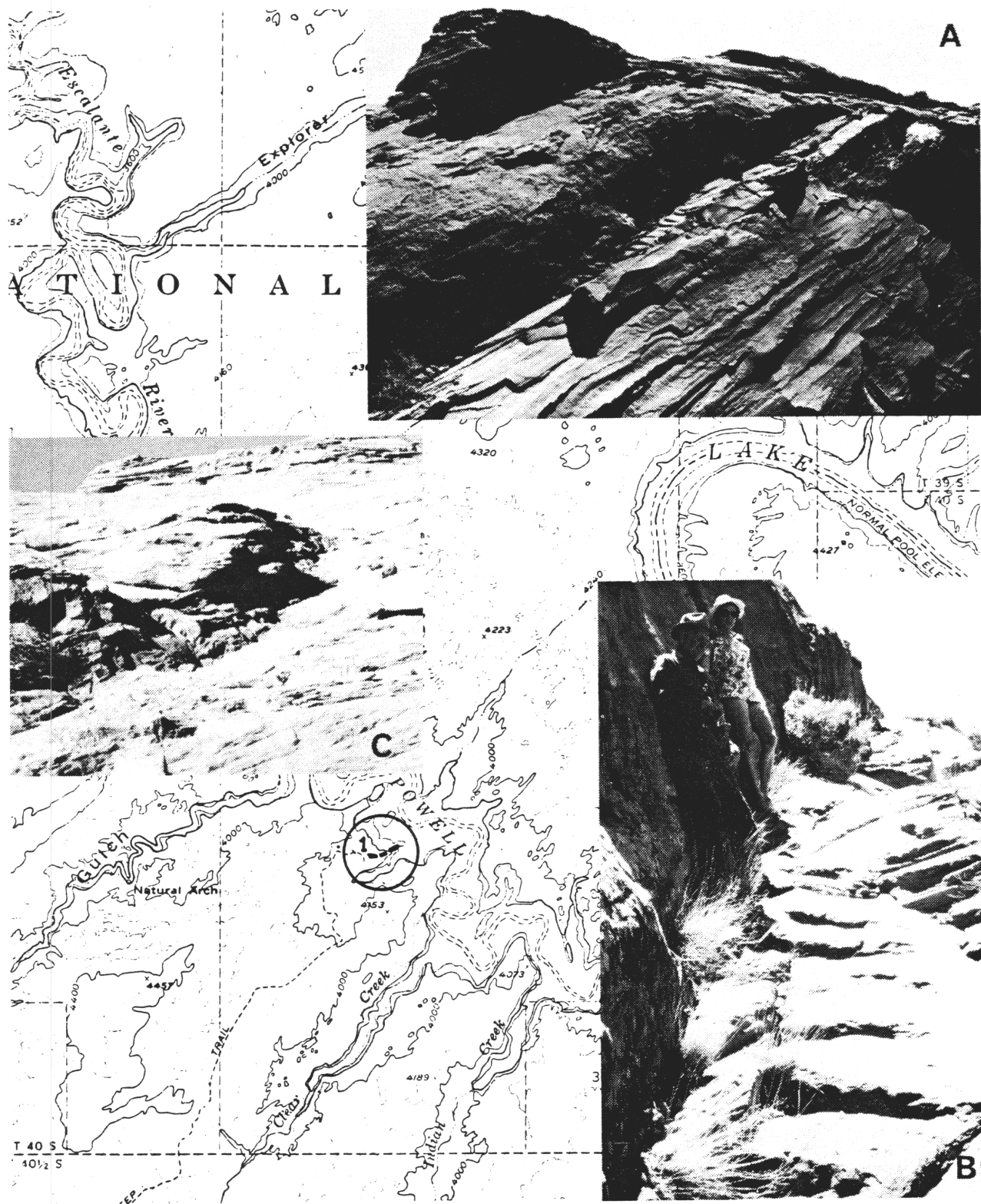


Figure 21. Escalante River Site 1 horse ladder. A. General view of horse trail up fracture ledge; foreground previously covered by talus. B. View up ledge trail (Photo by Tad Nichols). C. Upper portion of trail to Carmel platform.

Escalante River Site 6. Anasazi. Associated with UU42Ka200 architectural site. Pecked steps. About 1 mile upstream from Willow Creek on main channel left bank. Two houses; foot holds pecked between them; whole area very steep.

Escalante River Site 7. Anasazi. Pecked steps associated with UU42Ka207, architectural site. Toe holds cut in rock to small slab structure (storage?). Ruins stabilized and will be above 3700-foot elevation.

Of the seven sites in the Escalante River or its tributaries six are Anasazi. The Escalante canyon bed may have served as a through route for prehistoric peoples traveling between the Kaiparowits Plateau area via the main stem of the Colorado to Cummings Mesa or its environs. Apparently access to the canyon rim was possible in a number of places in the main canyon and even in such vertically walled canyons as Davis Gulch and Fiftymile.

Iceberg (Wilson) Canyon

Iceberg Canyon, located at Mile 86, was one of those in which prehistoric ruins were found. Access into the canyon was by way of its mouth or trails close to the mouth.

Iceberg Canyon Site 1. Anasazi. Associated with UU42Sa640, an Anasazi camping site or temporary shelter. Pecked steps, very weathered.

Iceberg Canyon Site 2. Anasazi. Associated with UU42Sa641, a camp or shelter site used probably by prehistoric peoples. Pecked steps from sandstone bench up to alcove.

Good water and forage prompted cattlemen and probably miners to use this canyon for their cattle and/or pack animals. A stock trail from the Rincon area reaches the canyon floor from its north bank and a stock trail also descends the canyon wall on the south bank; both of these are within a mile of its mouth (Crampton, 1962). A trail on the Kayenta bench slightly downstream from the canyon mouth may be associated. Main Channel Site 35, across the river, may be a continuation if the river could be forded at this point.

Slick Rock Canyon

Slick Rock, at about Mile 88, is a short alluvium-filled and rocky-sided canyon still brushy at its head, with water level at 3665 feet. The canyon has an unexpectedly steep gradient, dropping 200 feet from its head to its mouth.

Slick Rock Canyon Site 1. Anasazi. Pecked steps and a slab stairway. Associated with UU42Sa633, a large alcove site. The prepared stairway, along with one other, is unique in this area. Rock slabs were laid on the sloping talus for about 10 feet to reach the ledge upon which the site was located (Sharrock, 1964).

Slick Rock is one of a series of left bank canyons above the San Juan which contained prehistoric sites presumably because the accumulation of alluvial fill on the valley floor made agriculture possible. Slick Rock was unique in that the fill had not been washed out, as it had been in other canyons.

Lake Canyon

Lake Canyon is a narrow, left bank tributary of the lake at 97.5 miles upstream from Glen Canyon Dam. Remnants of the alluvial terraces which made it one of the more heavily populated prehistoric areas in Glen Canyon are still visible along the canyon walls. Wild plants were abundant and the water supply unfailing. Lake Pagahrit, from which Lake Canyon received its name, broke its natural dam in 1915 and carried much of the recently formed alluvium and lacustrine sediment downstream.

Lake Canyon Site 1. Anasazi. Associated with UU42Sa615, NA6490(?), habitation sites. Pecked steps on cliff face to structures.

Lake Canyon Site 2. Anasazi. Associated with UU42Sa616, NA6491(?), habitation site. Pecked steps into alcove. Vertical grooves suggest ladder below steps.

Lake Canyon Site 3. Anasazi. Associated with UU42Sa624, small structures and granary. Pecked steps to habitation sites.

Lake Canyon Site 4. Anasazi. Associated with UU42Sa622, room retaining walls, and granary. Pecked steps up 7 feet to wall, then 12 to 14 feet to structures.

Lake Canyon Site 5. Anasazi. Associated with UU42Sa619, NA7204, habitation. Ten hand and foot holds into alcove.

Lake Canyon Site 6. Anasazi and other. Possibly associated with UU42Sa694 across the canyon. Series of pecked steps and four logs at steepest portion of slope. Stock trail up over canyon wall. Users probably Navajo.

Lake Canyon Site 7. Anasazi. UU42Sa610, NA7203. Weathered steps going up about 70 feet to now inaccessible alcove.

All but one of the sites associated with pecked steps were "pure" Anasazi. The trail in a single instance had been modified in some historic period. The hand and foot holds, in general, were pecked into the cliff faces to make possible the entrance to alcoves or ledges as contrasted to areas where the steps were primarily to reach the rim of the canyon.

Halls Creek

Halls Creek drains a long valley at the base of Waterpocket Fold and enters the lake at Mile 103. It was entrenched only in the last 4 or 5 miles before it entered the river and today is a wide, open bay.

Halls Creek Site 1. Anasazi. UU42Ka620. Pecked steps. Four and one-half miles from the mouth of Halls Creek on right bank 20 feet above stream were nine foot holds across the face of a sloping cliff. Apparently to facilitate movement around narrow portion of stream. No structure.

Halls Creek Site 2. Anasazi. UU42Ka604. Pecked steps.

In Halls Creek the dozen or so prehistoric sites recorded by the University of Utah survey indicate the majority to be chip-ping sites or campsites (Lister, 1959a). Lack of evidence for

agricultural exploitation probably indicates that the area was no more suited for growing crops than it is today. Either the aborigines were visiting the area because of the extensive chalcedony deposits or it was a principal north-south corridor between the Colorado River on the south and the Fremont drainage on the north.

A Colorado River crossing superior to that at Hole-in-the-Rock was developed in 1881, and several improvements were made in the approach trails. The route from the west came through Halls Creek to the river where Charles Hall operated a ferry boat used by miners, cattlemen, Indians, and reportedly by outlaws and rustlers.

Bullfrog Bay

The headwaters of Bullfrog Creek are in the Henry Mountains to the north and flow through a relatively shallow basin into the Colorado. Today the mouth of the broad bay is at Mile 105. Only one site was recorded as having cut steps and they appeared to be miners' stairs.

Bullfrog Bay Site 1. Miner. Associated with UU42Ka513 storage structure. Steps cut with metal tool to alcove above structure. On opposite wall a second set led to bench above.

As in Halls Creek, all of the aboriginal sites recorded in Bullfrog appeared to have been campsites. None of them was associated with pecked steps. The picked steps were in Stanton Canyon which is now a tributary into Bullfrog Bay, but before the lake waters filled the bay, Stanton Canyon was a short tributary on the right bank of the Colorado River. Stanton Canyon was used as an access route into Glen Canyon for the Hoskaninni Company, a mining operation.

Summary--Forbidding Canyon to Bullfrog Bay

To the 43 pecked and picked steps of this area must be added several trails used by stockmen for moving cattle and sheep on the north side of the main canyon, as well as the extensive trail

system of the Navajos in the San Juan-Navajo Mountain region. Steps to Anasazi sites were located mainly in Lake Canyon and in the Escalante River and its tributaries. Prehistoric usage was extremely heavy in Lake Canyon. At least one set of pecked steps which led over the slickrock or out of the gorge was found in most canyons. Several historic trails can still be negotiated, i.e., the Schock, Hole-in-the-Rock, and Jackass Bench trails. In fact, this area is perhaps the most interesting historically, with a major number of sites attributable to the placer mining activity which took place in the late 1800s, and the crossing of the Colorado River by the Mormon colonizers. More stock trails not directly associated with Navajo or miners' picked stairways appear in this section of the lake.

Map 3 - Bullfrog Bay to Dirty Devil River

The distance from the Bullfrog Bay drainage to the mouth of the Dirty Devil River is approximately 60 miles. The waters of the lake have filled the tributaries to varying distances depending upon the physiography of the canyons. In the lower section of this division of the lake the canyons are incised into the sandstones of the Glen Canyon group with Navajo sandstone generally exposed at the mouths of the tributaries. As one goes north Kayenta and Wingate sandstones are more visible (Sevenmile Canyon exhibits only Kayenta sandstone above the lake level). At Good Hope Bay and the Rincon area the Chinle shale is the major formation along the lake shore. At White Canyon the Shinarump and the Moenkopi appear, and the chocolate layers of Moenkopi outline the lake at Hite Marina.

Main Channel

Main Channel Site 37. HS106. Stock trail, users unknown but may have been miners. Trail crossed the slickrock to reach the sand bar. At Elbow Bar, upstream from mouth of Moqui Canyon.

Main Channel Site 38. HS51. Anasazi, miner, Navajo. Pecked steps and stock trail. Hand and toe holds pecked around potholes, and pecked steps to rock shelters about 30 feet up the cliff face (Crampton, 1962). Stock trail, constructed with pegs and stringers, 75 feet up the slickrock from the bar. Mining activity took place in the area and the trail was used by Navajo Indians with horses.

Main Channel Site 39. Anasazi and miners. HS53. Pecked steps, enlarged. The upper portion of a long series (Figure 6) of pecked steps up the steep cliff to the rounded domes of Navajo sandstone can be seen from the lake today. Originally these steps began at a bench about 75 feet above the river and climbed 50 feet to the top. They have been enlarged with a metal tool, presumably a pick.

Crampton (1964b) reported picked-out steps at a spot upstream

which led down to the mouth of Forgotten Canyon. This route would allow access along a ledge from Forgotten Canyon to California Bar without having to traverse the river bed where the water ran against the cliff wall. These steps are not listed as a separate site.

California Bar was the scene of much placer mining activity. It is thought that miners enlarged the prehistoric steps to allow access to the Carmel platform above. Perhaps they left some of their stock (pack animals) on the vegetated terrace, although California Bar was noted for its grazing possibilities and a small herd of cattle had to be rescued from that area when they were cut off by the rising lake water (J. Frank Wright, personal communication).

Main Channel Site 40. Anasazi. Associated with UU42Ga368, NA3718, a masonry structure on ledge. Pecked steps up face of cliff to seep line. Just downstream from Smith Fork.

Moqui Canyon

Moqui Canyon is a long left bank tributary entering Lake Powell at about Mile 109.5. At the mouth the canyon is entrenched in Navajo sandstone while farther up the canyon the Kayenta and Wingate sandstones and the soft Chinle shale appear. Remnants of deep alluvial terraces can still be viewed upstream, giving one some idea of the agricultural possibilities exploited by the prehistoric population.

Moqui Canyon Site 1. Anasazi. UU42Sa586. Pecked steps left bank of Moqui Canyon. Series of 31 hand and toe holds up ledge to alcove.

Moqui Canyon Site 2. Anasazi. UU42Sa724. Pecked steps gave access to rock terrace from alcove below. No structure, but possibly a lithic site.

Moqui Canyon Site 3. Anasazi. Associated with UU42Sa684. Hand and foot holds up slickrock from top of alluvial terrace. Led to masonry structures.

Moqui Canyon Site 4. Anasazi. Associated with UU42Sa734, previously listed as part of Site 605 (Schroedl, 1976). Pecked steps up cliff face to alcove with masonry structures.

Moqui Canyon Site 5. Anasazi. UU42Sa587. Toe and hand holds cut in face of cliff led to high alcove; steps curved around a bulge in the cliff face then went diagonally to the alcove.

Moqui Canyon Site 6. Anasazi. Associated with UU42Sa371, a structure on a ledge or alcove high above the stream bed. Reached by a series of pecked steps.

Moqui Canyon Site 7. Anasazi. Associated with UU42Sa577 structures, and NA6885 steps only. Pecked steps led to architectural features on ledge.

Six pecked-step features were recorded in the portion of Moqui Canyon to be flooded by Lake Powell. An additional one, Site 4, in the North Gulch arm will be above water. Of these seven, four led to masonry structures, one to a possible lithic site, and two to high alcoves. Moqui Canyon was heavily occupied in prehistoric Pueblo times, perhaps more so than any other Glen Canyon area. The sites covered by the lake represent only a small portion of those in the upper tributary canyons.

Crystal Spring Canyon

Crystal Spring Canyon has also been called Beaver and Little Ball Canyon. It enters Lake Powell on its left bank at Mile 114.5 across from Hansen Creek Canyon and was a deeply incised narrow canyon in pre-lake days.

Crystal Spring Canyon Site 1. Anasazi. UU42Sa574. Seventeen pecked steps cut in face of ledge led probably to high, deep alcove. No structure seen.

Crystal Spring, a small canyon with a total of three Anasazi sites, was located between Forgotten Canyon and Moqui Canyon with their large concentration of prehistoric populations. It appears to have been more popular recently as a cattle grazing area than it was earlier as a habitation site.

Hansen Creek Canyon

The tributaries of Hansen Creek head in the Henry Mountains and Hansen Creek Canyon meets Lake Powell at about Mile 114.5 on its right bank. The lower canyon was deeply entrenched as were most of the canyons in this part of Glen Canyon.

Hansen Creek Site 1. Anasazi. UU42Ka605. Hand and toe holds cut into sandstone face, led to rock shelter high in cliff. No evidence of structure. Campsite or chipping site suggested by Lister (1959a).

Hansen Creek was historically important to miners and cattlemen who could use the creek bed for transit. Prehistoric travelers, too, must have been able to traverse the canyon bottom to reach river crossings and such left bank exits as that at California Bar (Main Channel Site 39). However, the area, like that of Halls Creek and Bullfrog Bay, was still unattractive as far as farming possibilities were concerned, although the left-bank tributaries in the same area were being heavily utilized.

Forgotten Canyon

Deeply entrenched in the Navajo sandstone at its lower end, Forgotten Creek heads between Moqui and Cedar Canyons and the canyon meets Lake Powell at Mile 116.5. Previous remnants of alluvial terraces in the lower part suggest the presence of agricultural land. A sand bar upstream from the mouth might also have supported the growing of crops.

Forgotten Canyon Site 1. Anasazi. Associated with NA5357 masonry structure. Shallow, weathered pecked steps led around cliff face to ruin in alcove.

Forgotten Canyon Site 2. Anasazi. UU42Sa592. Pecked steps on face of slickrock bench. Only access into upper canyon around deep potholes.

Forgotten Canyon Site 3. Unknown. UU42Sa493. Horizontal steps cut into cliff to allow bypass of potholes in stream bed. Anasazi, but from description in University of Utah survey sheets they differed from usual hand and foot holds.

Apparently the steps in both Sites 2 and 3 were necessary because of the series of large potholes which formed below a 40-foot dropoff in a very narrow slot in the canyon. The archeological crews from the University of Utah used this trail for several weeks, cutting and deepening the steps for a safer passage (Lipe et al., 1960).

Forgotten Canyon Site 4. Anasazi. Associated with UU42Sa591, NA6522, masonry structures in alcove and on talus slope. Pecked steps led toward upper canyon.

Twenty-five sites in the location of Smith Fork and Forgotten Canyon were recorded; the most heavily populated area was Forgotten Canyon itself. All of the sites were Anasazi including the four recorded hand and foot holds. Two of the pecked step features were associated with architectural habitations and two were detours around an extensive series of potholes.

The agricultural terraces of the mouth of the canyon and in Forgotten Canyon were undoubtedly an attraction for the aboriginals. In addition to this, a good water supply may have been provided to the lower portion of the canyon because the Navajo sandstone is a good aquifer.

Smith Fork

The creek of Smith Fork heads on the southern flank of the Henry Mountains and the canyon meets Lake Powell at Mile 116.5 on the right bank.

Smith Fork Site 1. Anasazi. Associated with NA5364, UU42Ga365 granaries. Pecked steps up cliff for about 300 feet to narrow ledge above overhang.

Five aboriginal sites were located at the mouth of Smith Fork but only one was recorded within the canyon proper (Lister, 1959a). This seems to argue that the canyon itself was not favorable for prehistoric occupation. Nearby alluvial terraces which were capable of supporting crops were undoubtedly responsible for the occupation

near the canyon mouth and on the riverbank. The canyon could be traveled and probably served as part of a corridor connecting the east bank of the Colorado and the Henry Mountains (Lipe et al., 1960).

Trachyte Creek Canyon

No pecked steps or picked stairways were recorded in Trachyte Creek, but since prehistoric, as well as some historic, trails are included in this survey, we have taken the liberty of assuming that an aboriginal trail traversed Trachyte Creek. Lister (1959a) stated that the creek was eminently suitable for aboriginal farming. Wide terraces along the lower canyon and large expanses of land at the mouth were available. Of the 13 archeological sites reported, eight contained permanent habitations or storage units.

Summary--Bullfrog Bay to Dirty Devil River

If it were not for Moqui Canyon, Forgotten Canyon, and Trachyte Creek one might assume that the aboriginals of the area seldom visited upper Glen Canyon. Except for Trachyte and a few in the north Rincon area, sites close to the river were rare above Forgotten Canyon. Of the 16 pecked steps documented, 11 were in these canyons and most led to alcoves or ledges above the alluvial fill which made the canyons attractive to the seasonal visitors. One beautiful set of pecked steps leads upward on the left bank just downstream from Forgotten Canyon. Stock trails were common and led into nearly every canyon from Hansen Creek north to North Wash. A more detailed description of the cattle trails in these areas is included in a separate portion of this inventory.

Cattle Trails

The story of trail systems in the Glen Canyon-Lake Powell area would not be complete without mention of the use of these tortured, dissected, and supposedly impassable canyonlands as grazing lands for cattle. As early as 1880 ranchers from the Blanding, Utah, area were bringing cattle to the mesas north of the San Juan and east of the Colorado River. To the west the town of Escalante was established in 1875-1876 (Perkins, Neilson, and Jones, 1968) and cattle were being pastured in the good cattle country southeast of Harris Wash and on both sides of the Escalante River. Except for areas withdrawn for mountain sheep refuges, such as Mancos Mesa, cattle still roam this country. Both sheep and cattle from the Navajo Reservation are seen today on the lake shore, especially in the vicinity of West Canyon.

Because of the slow-moving stream in Glen Canyon, stable terraces and sand bars supported reasonably lush vegetational cover. The Carmel and Kayenta platforms, also vegetated, served as relatively easy highways along the river banks once they were reached from above or below. In addition to the muddy river, water was available at springs, from potholes, and in creeks of tributary canyons.

It is said by cattlemen that if one wants to find the easiest trail to the top of a hill one finds a water source at the bottom, puts a bale of hay at the top, and introduces a cow to the scene. Most of the stock trails in the upper Glen Canyon area, dissected and rough as it is, were probably selected by the cattle themselves as they picked the most effortless way between water and forage. Mountain sheep found ingress or egress where man could not, and these trails proved a useful clue to ways of getting in and out of particularly difficult spots. In lower Glen Canyon where Navajos and/or Paiutes pastured sheep, herders were responsible for the ramps and picked-out stairways which made it possible for sheep to reach the river. The majority of these could not be negotiated by cattle.

Since it was not feasible, nor even desirable, actually to trace all cattle trails, the symbol for stock trails, other than Navajo, has been placed on the maps in the general vicinity, or in a few specific canyon bank locations. The trail sites are, in general, not given a number, nor are all of the trails or entries included. From verbal descriptions (Brig Stevens, personal communication), from Crampton's publications (various), and from J. Frank Wright's "show-me" trip, the tracing of some trails was attempted. Symbols for stock trails that are rather exclusively cattle trails appear principally on Maps 2 and 3.

Some of the tributaries of upper Glen Canyon were named for cattlemen. J.A. Scorup, a pioneer San Juan County rancher, ran cattle on the eastern bank of the Colorado in the 1880s (Crampton, 1964b). This outfit still survives as the Scorup-Somerville Cattle Company. Tom Farley had cattle in the area in the 1880s and 1890s. Many of the tributary canyons were used for wintering cattle and most have been mentioned as having cattle trails that entered the canyons on the right or left bank or followed the canyon bed all the way from the head to the river. Apparently there was not much crossing of the river; leases were for one side or the other, although there were always exceptions.

Ranchers pastured livestock on the uplands on both the east and west banks of the Escalante River. A stock trail with picked steps, possibly for sheep, entered Davis Gulch about 3 to 4 miles above the mouth. A trail led from the head of Clear Creek down the Escalante River, up to the Kayenta platform which followed the curve of the Escalante left bank at its mouth, up the Colorado River right bank on the Kayenta bench, to Long Canyon, and beyond. A trail, the upper portion of which was still visible recently (Steve Gloss, personal communication) led out of Bowns Canyon, a tributary to Long Canyon. J. Frank Wright (personal communication) stated that cattle could have been brought down the horse ladder above the gaging station (Escalante River Site 1), across the Escalante, and up to Pollywog Bench on the left bank.

J. A. Scorup brought his cattle into the Rincon area for winter pasture, and at least one of the trails which led to the extensive river flats was paralleled by a road built for uranium and oil prospectors (Main Channel Site 33). Crampton (1962) recorded several trails, used by cattlemen in the Iceberg Canyon area, which entered the gorge on both the right and left banks within 1 mile of its mouth. As evidenced by the message on the rock (Main Channel Site 34), cattlemen or miners were on the Kayenta bench just west of the Iceberg mouth. To enter Slick Rock Canyon in the same area cattle had to move along the main river banks. Lake Canyon Site 6 is inventoried as a stock trail because, in addition to the pecked steps, logs were used to build up the trail; that would not have been necessary for foot traffic alone. The users were probably Navajo. The access into Crystal Spring, Forgotten Canyon, and Cedar Canyon was often from the main river although rough trails into Forgotten and into the upper reaches of Cedar canyons were known.

Entrance into Knowles Canyon was by way of a steep trail off Mancos Mesa. This highland country was one of the isolated mesas where cattle were pastured the year around, although winter usually found them sheltering in the tributary canyons. The cattle were rounded up, the calves branded, and the steers driven out to market once a year. Driving cattle in this country was no easy task. From the river the roundup crews drove the scattered stock back into Knowles Canyon, up one of the trails, and held them in a corral. Brigham Stevens (personal communication) recalled many of these roundups and trails and very kindly shared his memories.

Trails in the Red Canyon and north Rincon area sometimes followed the banks of the river and are now under water. Cattle commonly followed a route that led from Red Canyon around the west slope of Castle Butte to White Canyon. A portion of this was called the Rasp Trail.

A stock trail entered nearly every right bank tributary between North Wash and Bullfrog Bay. C. Gregory Crampton (personal communication) located a stock trail in 1975 on the left bank of

Smith Fork which is probably the trail located on the right bank on Maps 3 and 4. A short tributary of Trachyte Canyon was called Hospital Canyon (Crampton's HS76) and was easily fenced for the holding of sick cattle. (Authors' note: It is very reasonable that cattle in this area suffer from selenium poisoning as a result of feeding on forage of the selenium-rich Chinle shale.)

DISCUSSION

The Trail System

On the main channel in the lower part of the lake, from Glen Canyon Dam to the San Juan River, the majority of pecked hand and foot holds were associated with lithic workshops located on the terraces and ledges close to the available source of rock tool material. In a relatively few instances, foot holds were necessary to reach a habitation site. Contrary to this, the inhabitants often cut pecked steps up the steep, rounded domes or cliff walls to reach the Carmel terrace, rather than take the roundabout route via the river banks and canyon beds. Instances in which these step-trails were modified or paralleled by Navajo-Paiute sheepherders were second in importance to the lithic site steps. Miners cut one of their imposing stairways at Klondike Bar and several trails were initiated and used by various historic groups.

Of the tributaries the Face and Spring canyon complex was most heavily utilized. Good water, wild plant resources, available agricultural pockets, material for the lithic industry, and a possible hunting ground on the bench above Face Canyon made the area a favorable one. Here again, steps associated with lithic sites and trails built first by the Kayenta Anasazi and then preempted by the historic Indian were by far the most common.

In Navajo and West canyons the preponderance of trail sites were Navajo-Paiute sheep trails. They and the Anasazi used the canyons as highways between the river and the upper reaches. In Rock Creek not many sites were recorded in the original Museum of Northern Arizona or University of Utah surveys; of these few, four were directly associated with pecked steps. On the other hand, of the many Forbidden Canyon sites, only one contained a helpful foot-and-hand-hold feature; they were not necessary for most sites built on talus or the Kayenta bench. In the other tributaries, there are not enough sites with steps and/or trails on which to base any conclusions.

It is evident that in both the main channel and the tributaries of lower Glen Canyon the prehistoric Kayenta Anasazi and the historic Indian, principally the Navajo, were the primary exploiters of the canyon's resources.

The San Juan River country was known to the prehistoric Anasazi who established small and scattered farming communities there. Access routes into the canyon were not easily found and, once established, they tended to be followed by successive user groups. The San Juan Canyon was known to Spanish explorers; New Mexican traders; fur trappers; Mormon colonizers; and Utes, Paiutes, and Navajos before the mining activities of the 1890s flooded the canyon with prospectors. Navajos and Paiutes who historically, if not politically, have shared this area have covered the country south of the San Juan with their stock and foot trails, and cattlemen found the San Juan Triangle north of the river profitable. The stock trail at Nasja Creek is representative of the utilization of the Kayenta platform for forage and for travel.

The San Juan has been exploited by so many groups that, with one exception, it is impossible to measure the value of the area to one group as compared to another. The exception is, of course, the Navajo. All of the foot and stock trails immediately south of the San Juan, as depicted on Maps 2 and 3, were used by the Navajo or the Navajo-Paiute.

On the main channel in upper Glen Canyon very few pecked-step features were documented. Most of the sites were attributable to mining activities. Conspicuous miners' stairways are located at Anderson Bar (Schock Trail) and at Jackass Bench. In two instances miners modified the original prehistoric step-trails to reach the terrace above the river bars. One notable explorer-missionary route crossed the river at Hole-in-the-Rock.

In a few tributaries it is quite a different story. The left bank tributaries of Lake, Iceberg, Moqui, and Forgotten canyons, and the right bank Escalante River drainage contained a number of Anasazi sites. Most of the foot holds were associated with

habitation sites located on talus slopes, on ledges, or in the high alcoves. Pecked steps associated with lithic sites were minimal. Eleven pecked-step sites had no immediate association with a lithic or habitation site but led up or down the cliffs and over the ledges to various destinations.

If one accepts the evidence presented by an inventory of the step and trail system, one would assume that the regions of upper Glen Canyon were not occupied as extensively by the Anasazi as were those below the San Juan River. With the exception of the areas mentioned, the emphasis is on utilization by the miners and the stockmen, with an occasional penetration by the Navajo. This impression is, however, erroneous as there were a profusion of prehistoric sites recorded in several of the canyons above the 3700-foot level, and this inventory stops, in general, at that point which is above the maximum pool level and shoreline of Lake Powell.

The Colorado River itself might have presented a barrier to passage between the left and right banks were it not for the extensive sand bars which provided footing and areas of shallow water. Passage along the immediate river banks was facilitated by the presence of alluvial terraces and talus slopes. From A. Lindsay's notes on the trails of lower Glen Canyon it appears that the river could have been forded at the mouth of Warm Creek and was probably traversed on the left bank from there to the mouth of Navajo Canyon. Although there was a good network of trails in this vicinity, they cannot be tied directly into the Labyrinth Canyon trails. While there was a crossing to the north bank opposite West Canyon there were not steps sighted between there and Main Channel Site 22 near the Rock Creek mouth that might lead to a trail. River crossings between the mouth of Spring Canyon and Last Chance would be difficult because of the vertical cliffs on the north bank (no place to go). From Face Canyon to Main Channel Site 14 on the south side it would again be difficult to move up the river bank because of the vertical cliffs. From Dungeon Canyon to Wetherill there were no accesses along the south bank and, in the same area, precipitous

cliffs along the north bank would discourage the pathfinder. From Forbidding Canyon to Oak Canyon it was possible to walk along the talus. It is from these areas in the lower canyon that so many trails fanned out into the highlands and the more permanent habitation sites in the Cummings Mesa area.

The upper Glen Canyon banks vary widely from nearly vertical walls, miles of rubble, and rockslides to a few areas of gently sloping banks. Talus slopes, sand bars, and alluvial terraces were undoubtedly utilized in the same fashion as they were in the lower canyon. Crossings near the mouth of the Escalante were possible, as was travel north and south along its banks. A prehistoric trail through Smith Fork, across the river and up Forgotten Canyon, has been hypothesized; a long series of steps from the river terrace (Main Channel Site 39) may have been an alternate route. Cattle traveled the river banks from Crystal Spring to Farley Canyon along the left bank. Thus, the river was in some places difficult, but was never an insurmountable barrier.

Resource Utilization as Indicated by the Trail System

The Prehistoric Indian

Authors of many archeological reports generally agree that the Glen Canyon area was utilized only seasonally and intermittently. Habitations within or near the canyons lack evidence of long-term occupation, and campsites were used only by tool makers, hunters, and gatherers of wild plants. Certainly one of the major reasons for the occupation of the canyon was agricultural. These Pueblo Anasazi, and the earlier Basketmakers, always lived just on the edge of "enough." Finding pockets of sand and the deep alluvial fill in several of the canyons, and using ground water, minor streams, and runoff water as sources of moisture, these farmers took advantage of any available farmland. The temporary living sites and the many granaries are usually found within an area that could have been cultivated. Along with these associations are found



the San Juan River. Kayenta peoples also moved up the Escalante Canyon onto the Kaiparowits Plateau (Lister, 1964). Permanent habitations in these uplands included kivas. If ceremonial chambers existed, then a socio-religious structure can be assumed to have been operative. The foragers, farmers, tool manufacturers, and traders could easily return to the highland complexes for the religious round.

The Historic Indian

The Southern Paiute who included this part of the Colorado in their range may have filled a temporal gap between the Anasazi, who left the area before 1300 A.D., and the Navajo, who began to filter in about 1850 A.D. The Paiutes were still in control of the left bank in 1828 A.D., but there is no documentation of their presence after the 1830s (Euler, 1966). When the Navajo moved in they displaced or mixed with the few Paiute remaining in the area. The Southern Paiute were "foot Indians" and probably knew the canyons of Glen Canyon as well as the Anasazi and used its resources in much the same way but without the emphasis on agriculture.

The Navajo Indian exhibited a recognizable variability in his adaptation to and utilization of the Glen Canyon environment. He undoubtedly used some of the lithic material, he may have planted a little corn, and certainly he hunted when possible; but his primary reason for being in the area was to find food and water for his flocks of sheep and goats. All Navajo sites (hogans, sweat lodges, casual camps, and corrals) in the canyons or on the Carmel terrace had access to a river bar or terrace. Many of the access trails followed an original prehistoric step-trail. Remains of corrals built on vegetated river terraces against a natural rock wall suggested their use as lambing, or holding, pens. While the Navajo ranged over much of lower Glen Canyon, as a herder he was confined by the physical limitations of his livestock. When this was not true he probably ranged as far as anyone. For example, Navajos, Paiutes, and Utes from as far away as Navajo Mountain and Tuba City (Crampton, 1962) brought trade goods to the Hole-in-the-Rock trading post while it was in operation.



The Stockman

The trails used by stock and by ranchers have been discussed. It will suffice to say that, as with other user groups, the canyonlands were not the barrier they seemed to be, and they contributed to mankind something more than their undeniable beauty.

The step and trail system of the Glen Canyon-Lake Powell area is one of the legacies to the National Park Service for its interpretation of shoreline features in the Glen Canyon National Recreation Area. The majority of archeological and historical treasures lie beneath the waters of the lake. A few of the foot holds and trails remain as tangible evidence for the occupation of Glen Canyon and the utilization of its resources.

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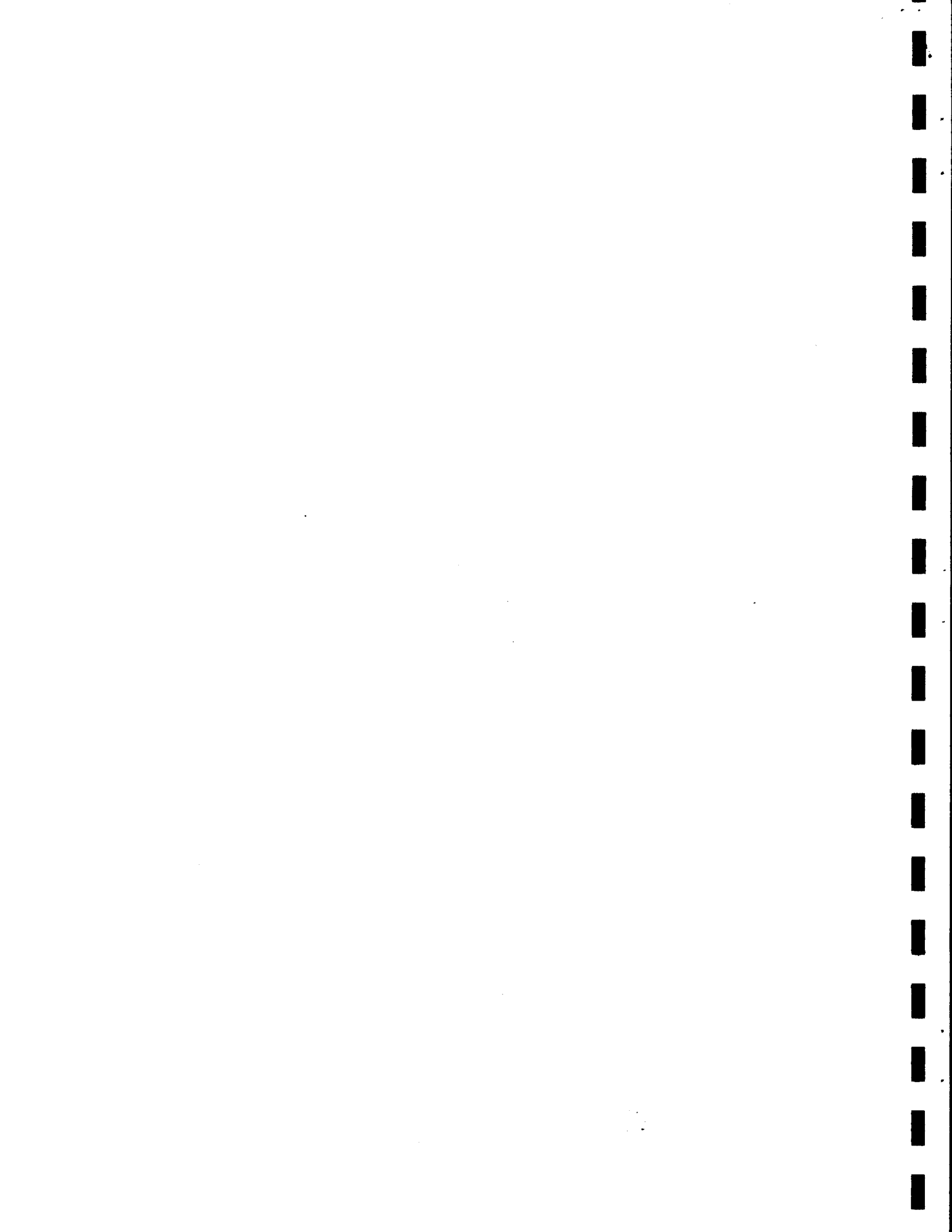
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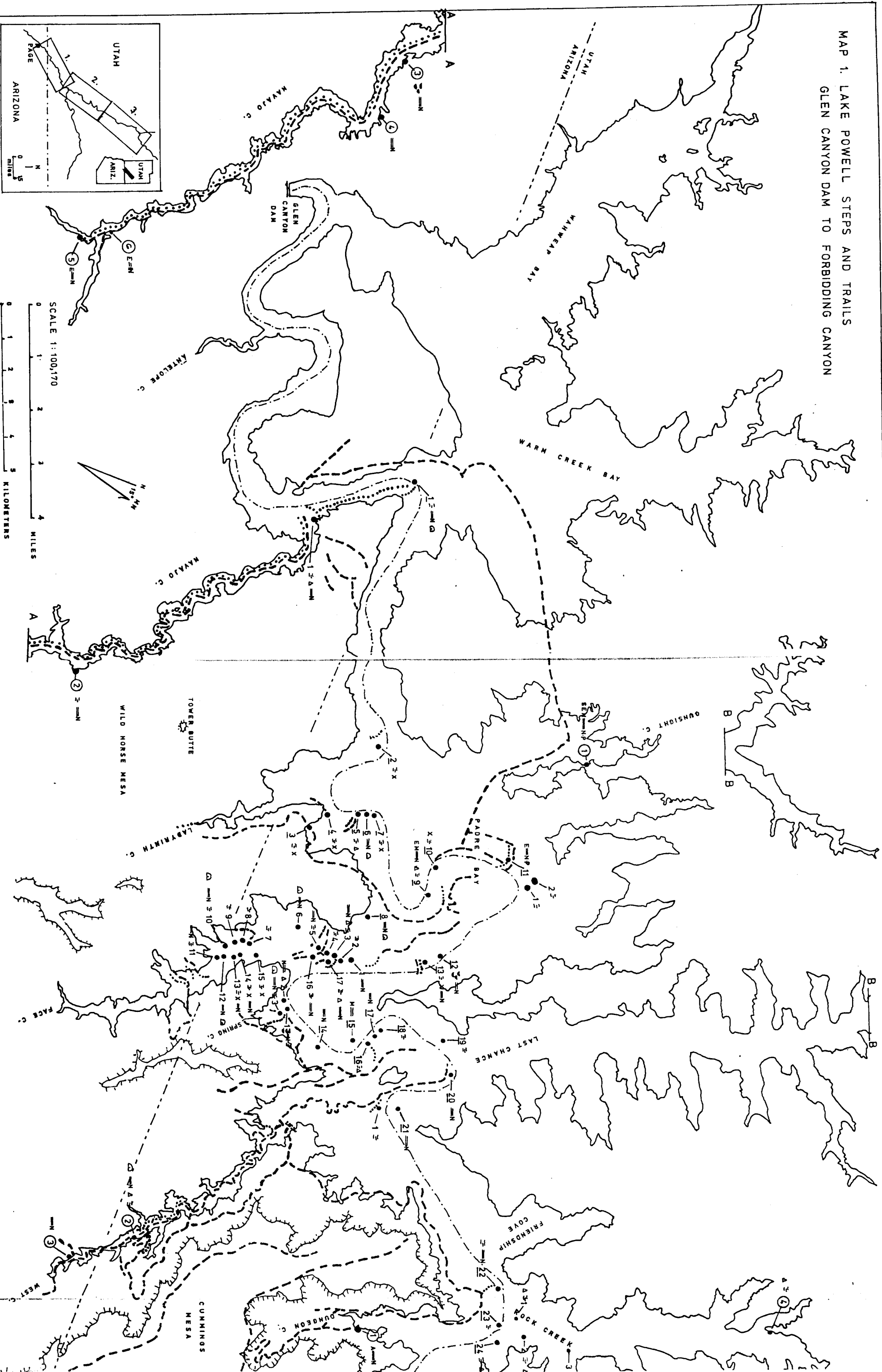
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APPENDIX

- Map 1. Lake Powell Steps and Trails--Glen Canyon Dam to Forbidding Canyon
- Map 2. Lake Powell Steps and Trails--Forbidding Canyon to Bullfrog Bay
- Map 3. Lake Powell Steps and Trails--Bullfrog Bay to Dirty Devil River
- Map 4. Lake Powell and Environs--Trail Systems

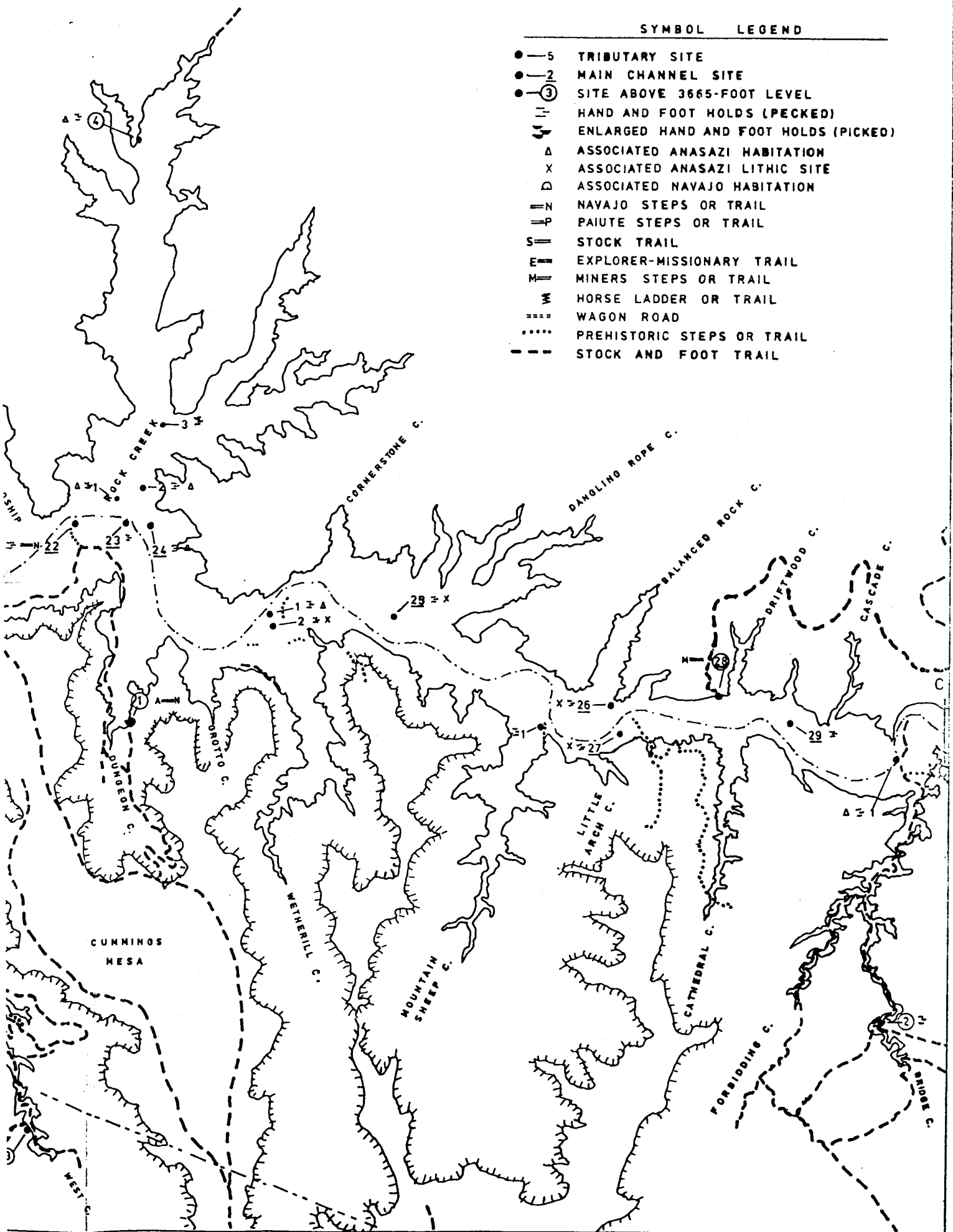


MAP 1. LAKE POWELL STEPS AND TRAILS
GLEN CANYON DAM TO FORBIDDING CANYON

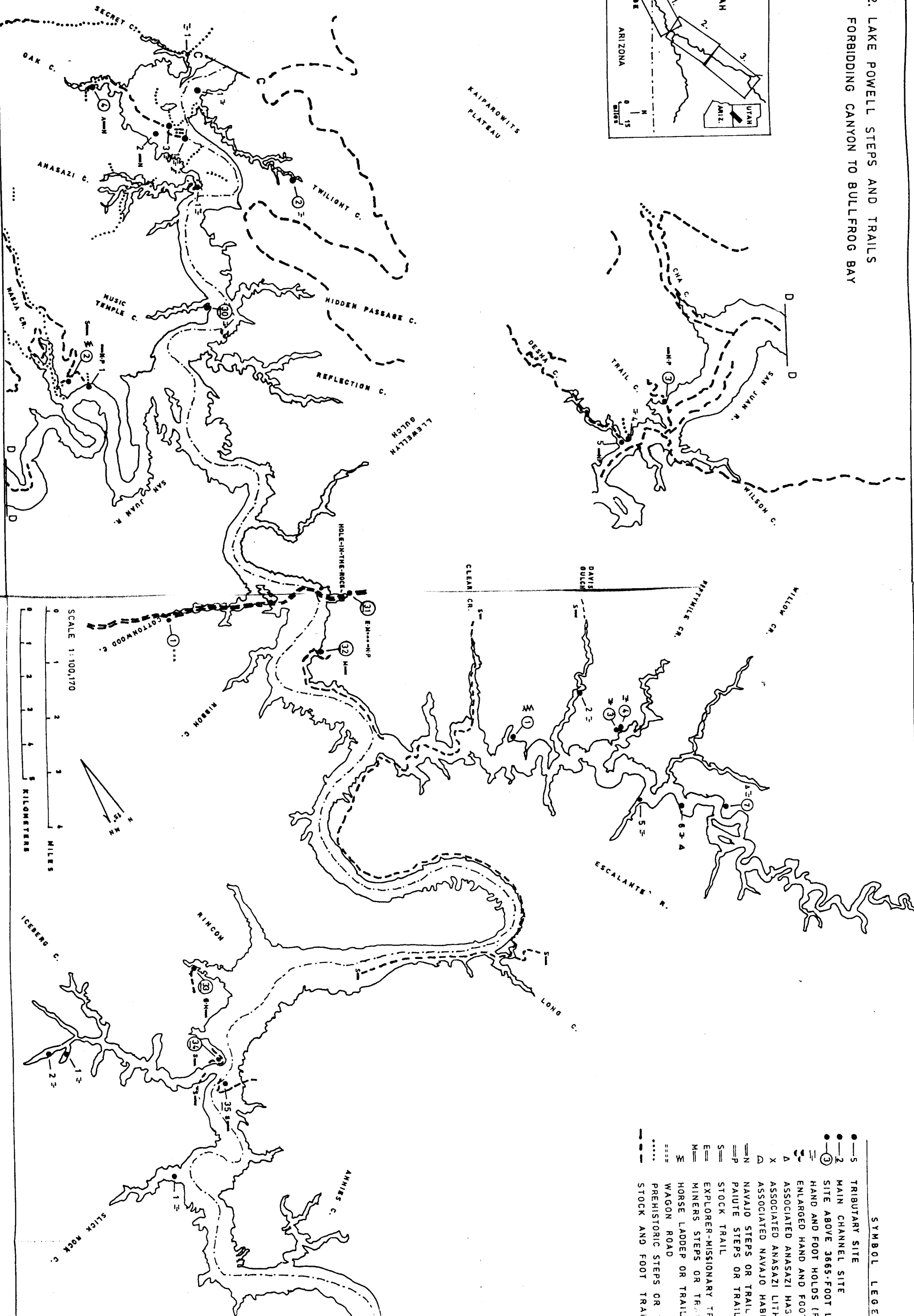
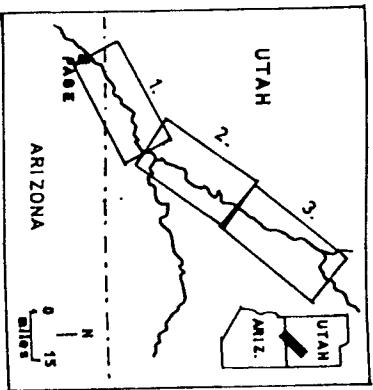


SYMBOL LEGEND

- 5 TRIBUTARY SITE
- 2 MAIN CHANNEL SITE
- ③ SITE ABOVE 3665-FOOT LEVEL
- ||| HAND AND FOOT HOLDS (PECKED)
- ||| ENLARGED HAND AND FOOT HOLDS (PICKED)
- Δ ASSOCIATED ANASAZI HABITATION
- X ASSOCIATED ANASAZI LITHIC SITE
- D ASSOCIATED NAVAJO HABITATION
- == NAVAJO STEPS OR TRAIL
- == PAIUTE STEPS OR TRAIL
- S== STOCK TRAIL
- E== EXPLORER-MISSIONARY TRAIL
- M== MINERS STEPS OR TRAIL
- W HORSE LADDER OR TRAIL
- ==== WAGON ROAD
- PREHISTORIC STEPS OR TRAIL
- - - STOCK AND FOOT TRAIL



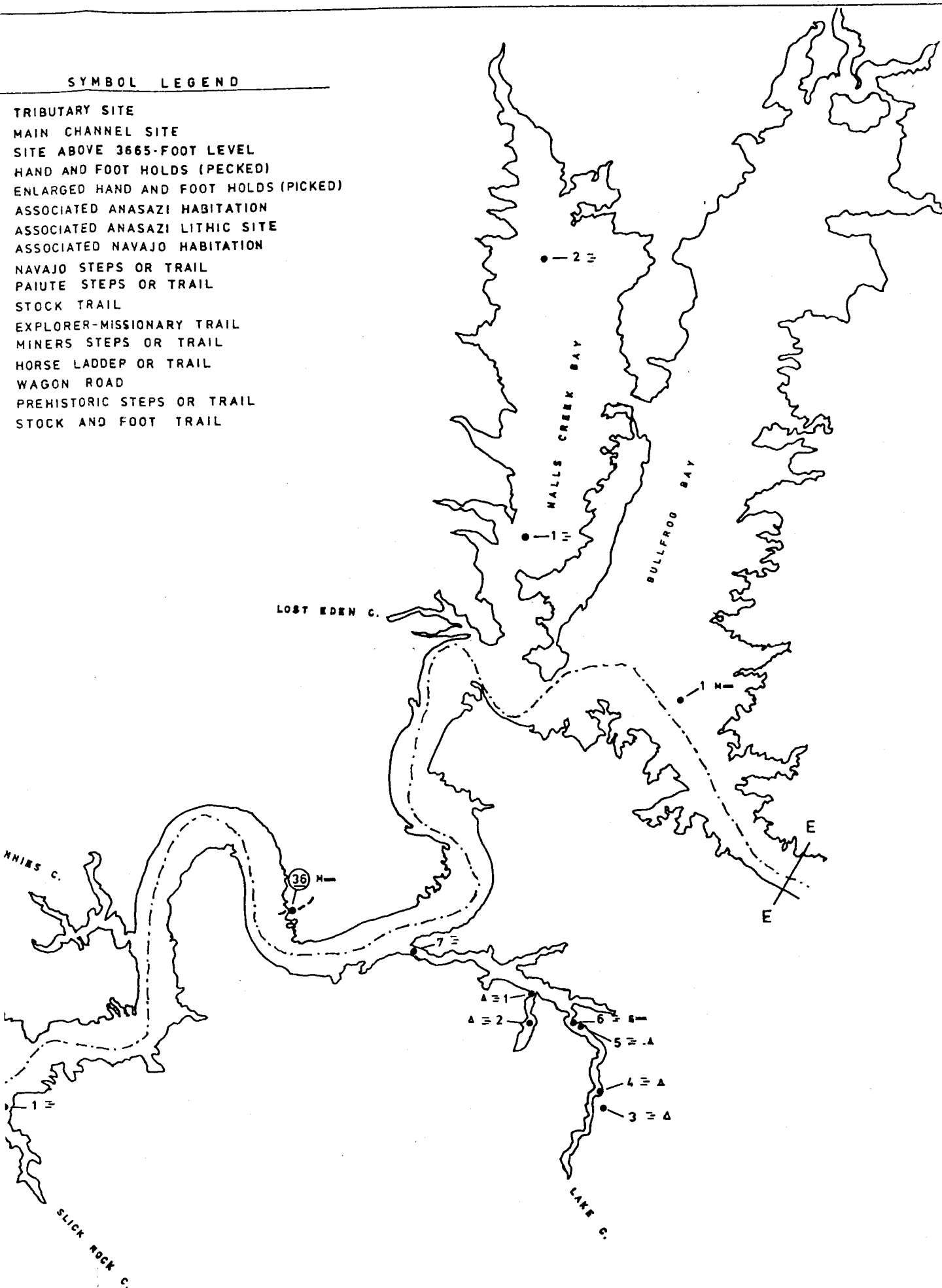
MAP 2. LAKE POWELL STEPS AND TRAILS
FORBIDDING CANYON TO BULLFROG BAY



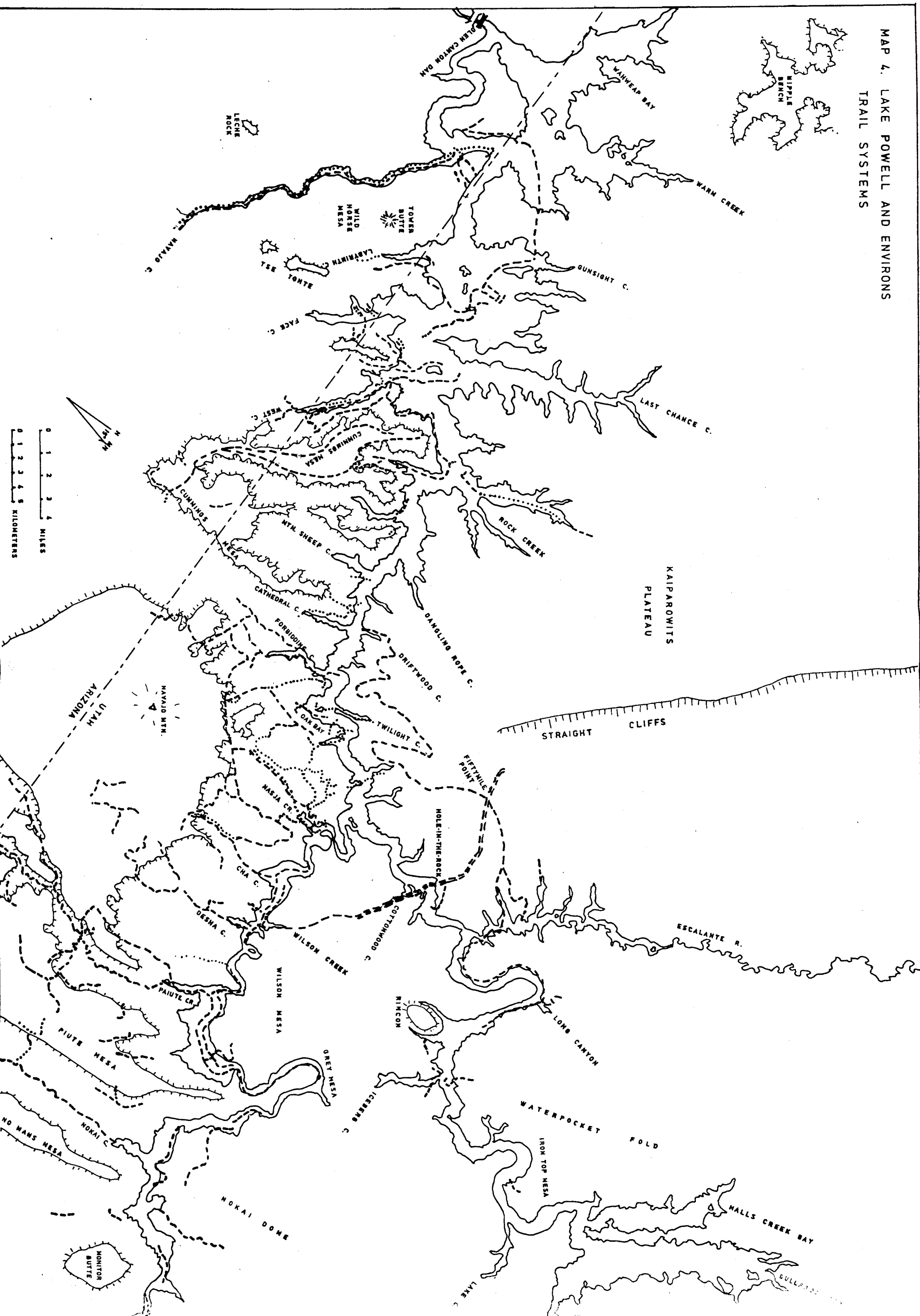
- SYMBOL LEGS**
- 5 TRIBUTARY SITE
 - 2 MAIN CHANNEL SITE
 - 1 SITE ABOVE 3665-FOOT L
 - 1 HAND AND FOOT HOLDS (P
 - 1 ENLARGED HAND AND FOOT
 - 1 ASSOCIATED ANASAZI HAB
 - 1 ASSOCIATED ANASAZI LITH
 - 1 NAVAJO STEPS OR TRAIL
 - 1 PAUTE STEPS OR TRAIL
 - 1 STOCK TRAIL
 - 1 EXPLORER-MISSIONARY TR
 - 1 MINERS STEPS OR TRAIL
 - 1 HORSE LADDER OR TRAIL
 - 1 WAGON ROAD
 - 1 PREHISTORIC STEPS OR T
 - 1 STOCK AND FOOT TRAIL

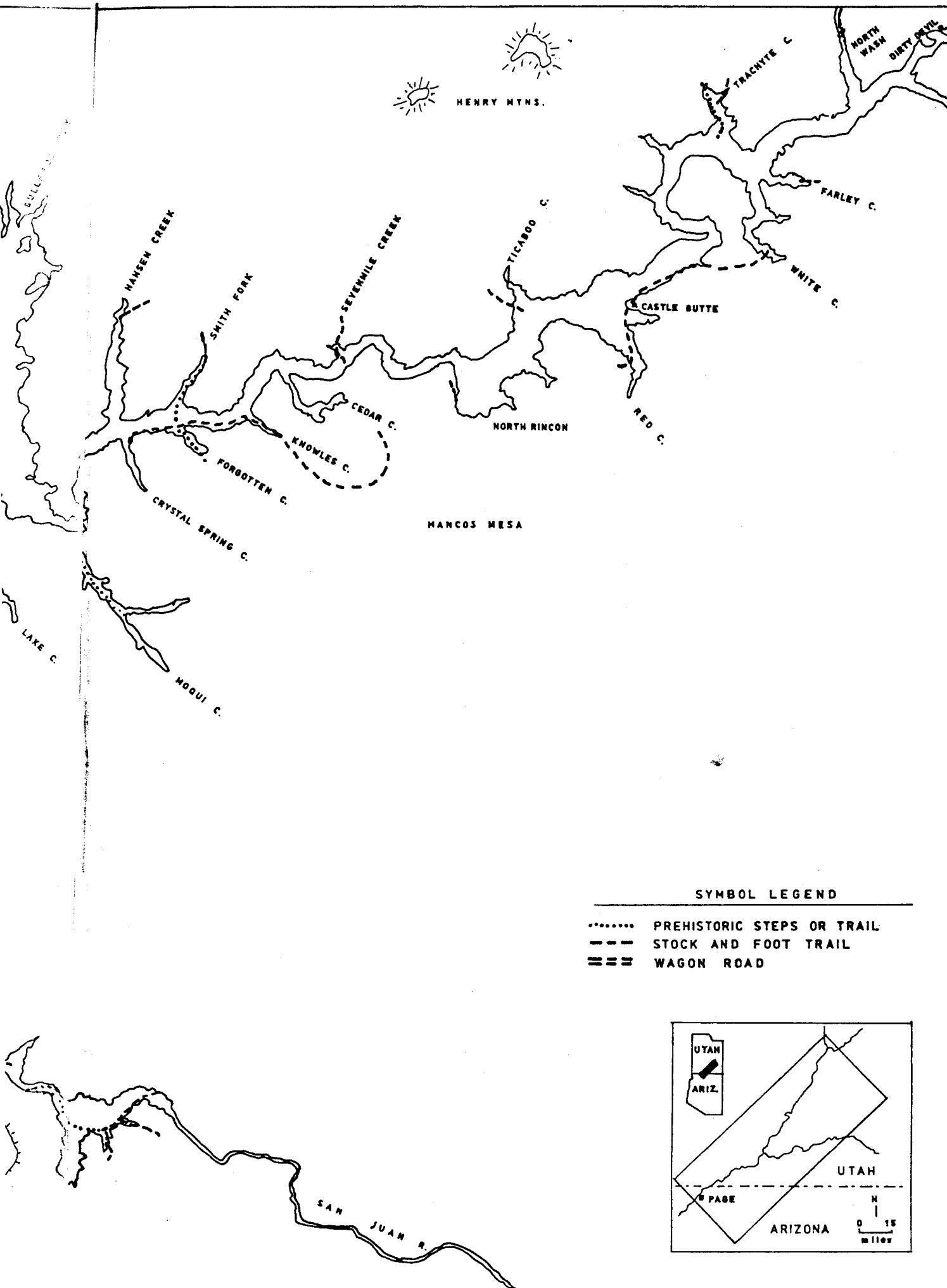
SYMBOL LEGEND

- TRIBUTARY SITE
- MAIN CHANNEL SITE
- SITE ABOVE 3665-FOOT LEVEL
- HAND AND FOOT HOLDS (PECKED)
- ENLARGED HAND AND FOOT HOLDS (PICKED)
- ASSOCIATED ANASAZI HABITATION
- ASSOCIATED ANASAZI LITHIC SITE
- ASSOCIATED NAVAJO HABITATION
- NAVAJO STEPS OR TRAIL
- PAIUTE STEPS OR TRAIL
- STOCK TRAIL
- EXPLORER-MISSIONARY TRAIL
- MINERS STEPS OR TRAIL
- HORSE LADDER OR TRAIL
- WAGON ROAD
- PREHISTORIC STEPS OR TRAIL
- STOCK AND FOOT TRAIL



MAP 4. LAKE POWELL AND ENVIRONS
TRAIL SYSTEMS





GLOSSARY

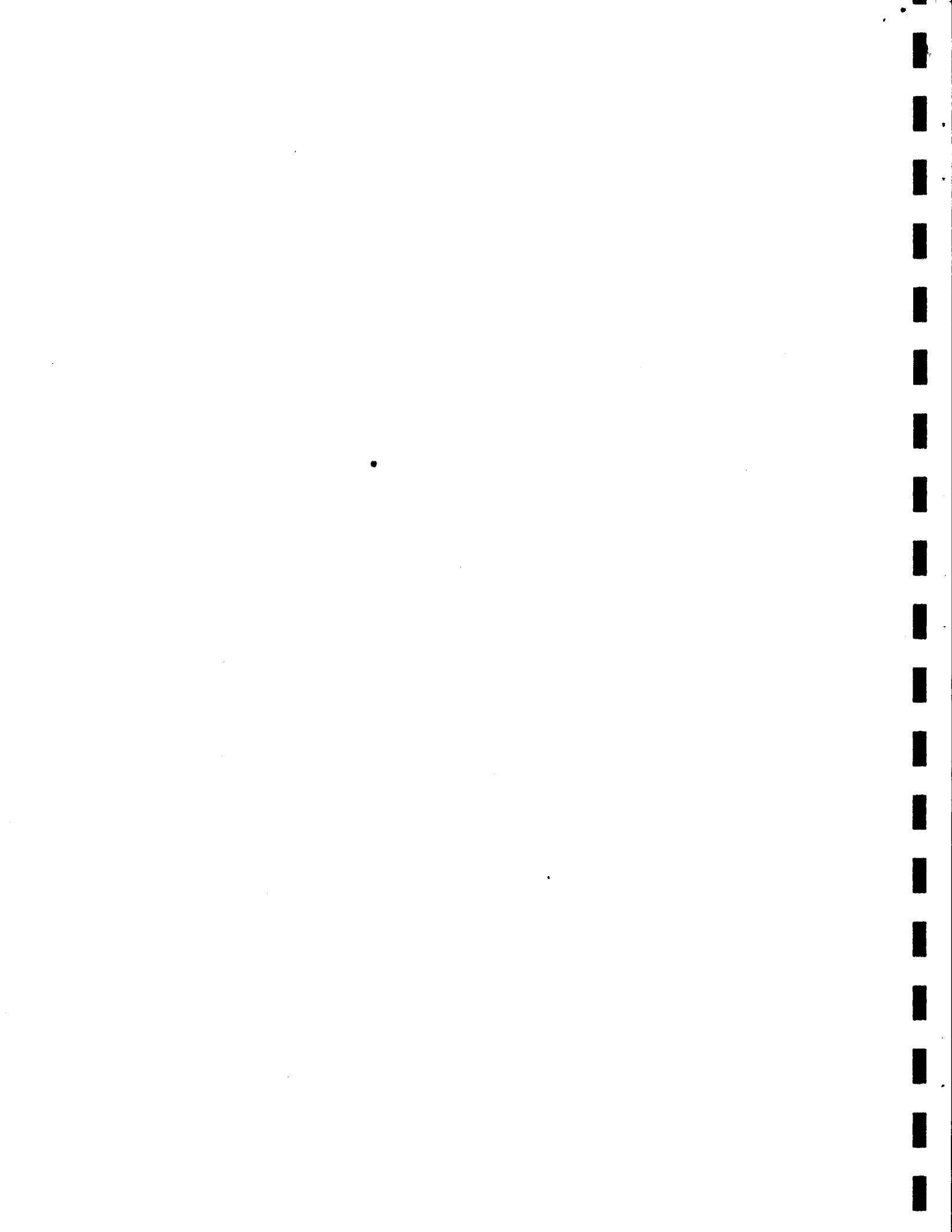
Anasazi	term applied to peoples of the Southwest who occupied certain geographical and cultural areas of the Four Corners region from about 1 A.D. to the time of the Spanish entry in 1540, with considerable flexibility in the earlier date
Basketmaker	term used for a particular cultural group of Indians living in the Southwest from pre-1 A.D. to approximately 700 A.D.; Basketmaker (Kayenta Anasazi) sites are fairly well documented for Glen Canyon
chalcedony	a quartz commonly used by prehistoric peoples for the manufacture of stone tools
chipping site	as used here, a site, usually located on a sand bar or river terrace, where the Kayenta Anasazi manufactured stone tools from the available Pleistocene gravels; also called lithic site or lithic workshop
cryptocrystalline	stone with an extremely fine crystalline structure, suitable for the manufacture of stone tools
hogan	the traditional house type of the Navajo Indian, usually made of mud and logs or stone

lithic	relates here to tools made of stone; also refers to sites otherwise called chipping sites or lithic workshops
pecked	as used here, refers to the method employed by the Anasazi for cutting steps into sandstone with a stone tool
petroglyph	figures or symbols cut or carved into a rock face
picked	as used here, refers to the cutting of steps with a metal tool, such as a pickax, as contrasted to the pecking of steps with a stone tool
pictographs	figures or symbols painted on a rock wall
potholes	as used here, natural erosional pockets in the sandstone which would hold water
Pueblo	term used for a particular cultural group of Indians living in the Southwest from approximately 700 A.D. to the present; the best documented time period for the Pueblo (Kayenta Anasazi) in Glen Canyon is between 1050 A.D. and 1225 A.D.
slickrock	the stripped naked rock, often eroded into domes, usually in the Navajo sandstone
sweat lodge	a small Navajo structure for the taking of sweat baths

THE AUTHORS

Natalie B. Pattison became involved in the Lake Powell Research Project in 1970 as a recipient of a John Muir Institute grant to do a preliminary anthropological study of the effect of the presence of Glen Canyon Dam and Lake Powell on the local Navajo population. She has a master's degree in anthropology and additional training in biology. Since 1971 she has been a part-time researcher with the Shoreline Ecology Subproject. In addition she is a part-time employee of the National Park Service-University of New Mexico Division of Chaco Research.

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